

Psychological Bulletin

NOTICE

CANCELLATION OF THE FIFTY-THIRD ANNUAL MEETING

of the

AMERICAN PSYCHOLOGICAL ASSOCIATION

and

PROVISIONS FOR A MEETING OF OFFICERS,

Evanston, Ill., September 6, 1945

To Associates and Members of the American Psychological Association:

The regular Annual Meeting, tentatively scheduled for September, 1945, has been cancelled because of continued restrictions on travel necessitated by the war. Emergency legislation has been submitted to Associates and Members as provided by the By-Laws and the results are being tabulated at the present time. If the legislation is approved, the present Council of Directors and persons with official duties will meet with the new Board of Directors of the reorganized American Psychological Association to transact essential business. The meeting will begin on Thursday, September 6, at 9:00 A.M. in the Hardy Lounge of Scott Hall on the campus of Northwestern University in Evanston, Illinois, and will continue until all business has been completed. PROFESSOR WILLARD L. VALENTINE will be the local representative in charge of arrangements for the meeting.

The minimum number of persons needed for the transaction of essential business will be invited individually to attend the meeting in order to keep the attendance below the restrictions. If conditions at the time permit, invitations will be extended to newly elected Members of the New Council of Representatives.

Associates and Members are requested to correspond with the Secretary concerning any items that should be on the agenda for the meeting.

Cordially,

WILLARD C. OLSON, *Secretary*

University of Michigan

Ann Arbor, Michigan

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THE USE OF THE WECHSLER-BELLEVUE SCALES WITH NORMAL AND ABNORMAL PERSONS

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INTRODUCTORY.

For more than five years since its original publication, the Wechsler-Bellevue scale (30) has been gaining in popularity. Two new editions of Wechsler's book have since been published. The tests have become widely accepted in clinical practice and have become a popular instrument for research purposes, especially in the detection of scatter and patterns of functioning in various and sundry mental disorders. As a result, there has been a reaction against the use of scales not possessing tests of functional unity in the investigation of psychometric patterns. Brody, in his summary, states that "It is a pity that so much work has been done with 'hotch potch' scales, which make comparison difficult. Wechsler's scale is to be recommended (6, p. 140)."

Wechsler's scale consists of five verbal subtests *Information*, *Comprehension*, *Arithmetic*, *Digits* and *Similarities* and of five performance or non-verbal subtests *Picture Completion*, *Picture Arrangement*, *Object Assembly*, *Block Designs* and *Digit Symbol*. A sixth verbal test *Vocabulary* is frequently added to, or substituted for one of, the verbal subtests. It is a point scale, standardized on adults, it takes comparatively little time to administer and has the advantage of not being predominantly verbal in nature.

During recent years a considerable number of investigations employing the Wechsler-Bellevue scale have accumulated. The present review is an attempt to coordinate and summarize the findings to date and offer some suggestions for the future treatment of the data which is quickly and steadily mounting.

COMPARISON WITH OTHER TESTS

Upon the publication of a new scale, there is a tendency to test its validity. This is usually done by comparing the results of the new test with those of some better known and traditionally more entrenched measures of intellect and, also, by a comparison of the test findings with clinical judgments and diagnoses, especially in connection with borderline intelligence and mental deficiency.

Stanford-Binet, 1916 Revision. Several investigators have compared the Wechsler-Bellevue findings with those of the 1916 Revision of the Stanford-Binet. Wechsler (30) reports a correlation of .82 in a group of 75 adolescents. Results of an unpublished study by Fishbein and reported by Wechsler (31) show a coefficient of .57 for 125 college freshmen. A correlation of .85 was obtained by Hayes (12) between the Wechsler-Bellevue scale and the Hayes-Binet, which is a special adaptation of the 1916 Stanford revision, especially for the use of the blind. Hayes' group consisted of adolescents (over 14) and adults. Since his subjects were blind, the verbal scale only was administered and the reported correlation is based on the results of that scale only. Thus, the correlations so far reported are about what is ordinarily expected in a comparison of different measures of intelligence.

Stanford-Binet, Form L (1937). Additional and, probably, more extensive work has been done in comparing Wechsler's Scale with the 1937 Revision of the Stanford-Binet, Form L. Weider et al. (36) report a correlation of .81 in a population of 61 male delinquents. The verbal scale showed a considerably higher correlation ($r .87$) than did the performance scale ($r .56$). Though the mean IQs on both tests show only a difference of one point for the entire group, there are considerable discrepancies in individual cases. The general trend was in the direction of lower Wechsler-Bellevue IQs for the brighter subjects and somewhat higher IQs for the duller ones. Halpern's (11) Mental Hygiene Clinic patients showed a markedly higher correlation with the Revised Binet, Form L ($r .91$). Similar correlational levels were obtained by Benton (5) and Mitchell (18) using mental patients of a wide age range. Benton's results show a coefficient of correlation of .93 for 60 subjects, while Mitchell's 268 patients yield a correlation of .89. Both investigators found much higher degrees of correlation between the Binet, Form L and the verbal scale of the Wechsler-Bellevue, than with the performance scale. Benton obtained r 's of .92 and .78 for the verbal and performance scales respectively, while Mitchell's study show correlations of .91 and .80 for the corresponding scales. Anderson et al. (1) report a comparatively low correlation ($r .62$) for the two tests in 112 female college freshmen. These compare well with Fishbein's (31) findings quoted above. Here, again, the verbal IQs correlate much more highly ($r .65$) than do the performance IQs ($r .39$). The investigators, consequently, feel that such low correlations "... cast considerable doubt on the validity of the performance scale at the college level (1, p. 323)." Moreover, they pointed out that the Form L, IQs are on the average 10 points higher than the Wechsler-Bellevue IQs. This fact confirms, in part, Weider's (36) findings mentioned before. A high correlation (.89) between the verbal scale and the Form L was reported by Hayes (12) in the study mentioned above. Rabin (19) was interested in investigating the validity of the Form L Vocabulary and compared it with the Wechsler-Bellevue findings in 268 State Hospital inmates of a wide age range. He obtained an $r .78$ for the entire group. Some variations in the relationship in different diagnostic and age groups were also observed.

Correlation with Other Tests. Some data on the relationship between the Wechsler-Bellevue and other tests of intelligence and achievement are also available. In order to investigate the efficacy of the Kent-Emergency Test in diagnosis, Lewinski (14) validated it with a comparison with the verbal scale findings of the Wechsler-Bellevue. The examination of 290 "psychopathic and subnormal" naval recruits yielded a correlation of .727. He found that the majority tested higher on the Kent-Emergency. He also obtained a discrepancy of 10 or more IQ points in nearly 29% of his cases. Wechsler (31), in the third edition of his book, reports Rabin's correlation of his test with the Army Alpha, S to be .74 in 92 student nurses; the same source reports Fishbein's correlation with the Morgan Mental Ability Test, yielding an r of .62 in 125 college freshmen. Goldfarb (10) correlated the individual subtests of Wechsler's scale with the CAVD and the Otis SA. The corresponding mean r 's are .439 and .425 respectively, in 168 subjects of a wide age range. The total results of the Wechsler-Bellevue of this study were correlated by Lorge and reported by Wechsler, yielding considerably higher coefficients, ranging from .39 to .73. The male subjects showed consistently higher correlations with both tests—the CAVD and Otis. An r of .70 of the verbal scale with the Stanford Achievement Tests for blind subjects was also reported by Hayes (12). The results of Anderson's study (1) show correlations of .48 and .53 between the full Wechsler-Bellevue

Scale and the ACE. The verbal scale correlations are somewhat higher and are comparable to those obtained with the Stanford-Binet, Form L, while the performance scale correlations are almost negligible and apparently account for the lowering of full scale coefficients of correlation. The correlation with the year grade average yields similar results, justifying the final conclusion that "The correlation of the ACE tests, Revised Stanford-Binet Test and the Wechsler-Bellevue verbal scale with grade point averages are all approximately equal. (1, p. 325.)"

Clinical Status. Several attempts to check the diagnostic effectiveness of the Wechsler-Bellevue Scales have been made. Balinsky et al. (4) have compared its effectiveness with that of the Stanford-Binet by correlating the test findings with the psychiatrist's recommendations for institutionalization or not, in two groups of retarded individuals, aged 10-22 and referred to the Bellevue Hospital. Actually a little over 100 cases serve as a basis for comparison. The findings show quite clearly higher correlations between recommendations and the Wechsler-Bellevue, Full Scale than between recommendations and the Stanford-Binet. While the correlations with the Full Scale for both groups are .720 and .785, the correlations of the recommendations with the Stanford-Binet are correspondingly .611 and .274. The relative effectiveness of the verbal and performance scales is not clear, since the results are equivocal and the high and low correlation coefficients are evenly divided between the two scales. A further extension of the study of the applicability of the Wechsler-Bellevue as a diagnostic tool was made by Wechsler and collaborators (34). Two groups of individuals, defective (IQs 50-65) and borderline (IQs 66-79) of a wide age range (10-49) were tested and a detailed analysis of the subtests made. "The differences between the mean scores on each of the ten tests obtained by the mental defective and borderline groups respectively, are all significant, except in case of Memory Span for Digits" They add further that ". . . all the verbal tests except the Memory Span for digits discriminate between the mental defectives and borderline groups (34, p. 557)." Lewinski's (14) findings with two similar groups of naval recruits show some comparable results, though the treatment of data is somewhat different. He feels, contrary to the previous investigators, that the Digit Span Test ". . . may be used advantageously in determining the possible existence of mental retardation in situations where rapid evaluation is essential (p. 544)." A dissenting voice comes as a result of Armstrong's (2) study; she feels that the 1916 Revision of the Stanford-Binet is a better diagnostic instrument, than either the Wechsler-Bellevue or Forms L and M of the new Revision, of mental deficiency, especially as differentiated from acquired mental defect or impairment of mental efficiency. This opinion is apparently based on clinical observation rather than experimental data.

Resume. It may be stated, therefore, that the majority of studies show high correlations between the Wechsler-Bellevue and other individual and group measures of intelligence. The highest Binet correlations are obtained in children and adolescents as well as in mental patients of a wide age range and greatly varying mental capacities. The correlations are much lower at the college level. This fact, however, is no reflection on the validity of the Wechsler-Bellevue; the fault may be with the Binet Scales, which are more adapted for children. Throughout the series of studies, the verbal scale correlates more highly with the traditional measures of intellect and achievement than does the performance scale. There is some evidence that the Wechsler-Bellevue IQs narrow the range of the distribution, i.e., higher IQs on other tests show lower Wechsler-Bellevue levels, while low borderline and defective level IQs show somewhat higher results.

on the Wechsler-Bellevue test. The evidence, though not unanimous, favors the Wechsler-Bellevue scales as a differential diagnostic tool between borderline and outright mental deficiency, since it agrees to a higher degree than other mental measurements with clinical-psychiatric recommendations.

TEST RESULTS AND CHARACTERISTIC PATTERNS OF SPECIAL GROUPS

Intelligence testing has for some years entered a new phase of development. The psychologists are no longer satisfied with the diagnostic value of the *total score*, IQ or other quantitative results alone. Nor are they merely satisfied in diagnosing mental defect. They have developed a special interest in finding common factors in certain clinical groups that will distinguish them from others. Such distinguishing factors may give rise to the hope of shedding further light upon the psychological processes concomitant with various social, emotional and physical maladjustments. Moreover, psychologists have been called upon to devise some measures of mental impairment and deterioration. Consequently, the various studies of the *scatter* on the Binet scales have taken place. The assumption of those studies were that, ideally, in normalcy, the several abilities sampled by the ordinary intelligence tests show a similar, even and comparable level of development. The story, according to mounting evidence, is entirely different in various personality and behavior disorders. The various capacities constituting "general intelligence" seem to show an uneven trend, scatter or pattern because of the differential and selective effects of the particular disorder. The Wechsler-Bellevue, being a point scale, made up of eleven subtests of comparable weighted scores, lends itself, according to various investigators, much more easily to pattern analysis than do the several age-level or "hotch-potch" scales. The functional unity of each subtest affords a better opportunity for clear-cut, quantitative and statistical treatment.

Alcoholism and Drug Addiction. Twenty-nine chronic, non-psychotic alcoholics were studied by Wechsler (32). All had a history of at least 10 years drinking, but showed no organic brain involvement. The ages ranged from 36 to 55 years. The results of the Wechsler-Bellevue show comparatively high scores on Information and Comprehension (10 points each), but Digit Span, Similarities, Object Assembly and Block Designs contribute scores of only 7.2, 8.3, 7.8 and 6.8 respectively. When these results are compared with the normal standardization group of the same age levels, it is apparent that some inefficiency is present. Wechsler feels that the results "... indicate that prolonged use of alcohol impairs the mental functioning of various abilities even before there is any evidence of brain pathology (p. 485)." He also concludes that there is a positive relationship between the chronicity of the alcoholism and the severity of impairment.

The results of Brown and Partington (8), who tested a large sample of 371 drug addicts with the Wechsler-Bellevue, are mainly negative. They found no significant differences in subtest score patterns between samples of normal-non-addicted individuals and drug addicts. The samples were well-controlled for several factors. The IQ distribution curve is skewed to the left and there is some evidence of higher IQs in voluntary patients than in prisoners or probationers, resident at the U. S. Public Health Service Hospital in Lexington, Kentucky.

Behavior Problems and Psychopathic Personality. An incidental product of the investigation by Weider et al. (36) is the comparison of verbal and performance scale results for their group of 61 "problem children." While the Mean IQ on the full Wechsler-Bellevue is 87 for the group, the verbal and per-

formance IQs are 82 and 94 respectively, showing a mean discrepancy of 12 points, in favor of the performance scale. However, since this distinction is not the object of the study, the reliability of the differences is not reported. Wechsler (31), classifies young psychopaths in the group "scoring higher on performance tests," but does not offer anything more than empirical and clinical evidence to substantiate the statement. Levi's (13) doctoral study finally offers an adequate statistical justification for Wechsler's statements regarding psychopathic personality. Levi's experimental group of 45 adolescent male psychopaths were compared with 194 non-psychopaths and with Wechsler's standardization group of the same ages. The results indicate quite clearly that while the two control groups have mean verbal and performance IQs which are practically identical, the experimental group of young psychopaths shows mean IQs of 91.33 and 107.67 on the verbal and performance scales respectively, with a discrepancy of more than 16 points. The discrepancy is statistically significant (more than 999 in 1000). Another differentiating pattern offered by Levi is that "the sum of the scores on the Picture Arrangement and Object Assembly Test is higher than the sum of the scores on Picture Completion and Block Designs (p. 60)." However, only 47% of the experimental group and 9% of the control group have both patterns.

Mental Deficiency. The only other clinical group in which the performance IQ is higher than the verbal, according to Wechsler, are the mentally deficient. Apart from the clinical-empirical discussion in his book (31), Wechsler and his collaborators (34) found it to be true in their group of 198 defectives, whom they compared with a borderline group of the same age range (10-14). They admit, however, that only the younger group shows higher performance than verbal scores, but in the age group from 20-49, the verbal and performance scores are almost identical. It was, therefore, left unexplained whether the discrepancy is only a function of mental deficiency or a function of age as well. Margaret and Wright (17), in comparing 40 morons with 80 schizophrenics of the 30-39 age group, found a slight discrepancy, in the moron group, in favor of the performance scale. This discrepancy was not statistically significant, however. They also concluded that the morons show greater variability in the scores on the subtests as compared with normal controls. Finally, three differential diagnostic signs were suggested for distinguishing moronity from schizophrenia: comparatively poor arithmetic in feeble-mindedness and comparatively poor picture arrangement and comprehension in schizophrenia.

Psychoses. In contradistinction to the relationship of verbal and performance scales in the two clinical groups just discussed, are the psychoses which are, according to Wechsler (31) among the "clinical groups scoring higher on verbal tests." This does not hold true in *all* psychoses. Rabin's (20) work confirms the statement regarding the higher scoring on verbal tests in schizophrenia. The younger group shows an especially large mean discrepancy, while the discrepancy is lower for his total group of 78 schizophrenics of an age range from 16-49. Weider (35) showed a sizable discrepancy for a group of young (16-28) schizophrenics, but failed to find it in his older group (31-49). Margaret and Wright (17) found no such discrepancy in their group of 80 schizophrenics aged 30-39 years. It seems then, that the discrepancy in favor of the verbal scale is also a function of age. It is present in young schizophrenics and disappears in groups beyond 30 years of age. Brown et al. (7) show that the "most impressive differences" between the Verbal and Performance Scales (in favor of the former) are found in depressive patients. This difference (verbal minus performance) distinguishes significantly between depressives and psychoneurotics. A lesser

difference is noted in the comparison with psychotics. Manic depressive psychosis shows even a slight discrepancy in favor of the performance scale, according to Rabin's (21) findings. Thus, the results show that a discrepancy in favor of the verbal scale is frequently found in schizophrenia, though not without exception. There is insufficient data to make a generalization of this sort about the other psychoses.

Psychometric patterns of a more complex nature were investigated by Rabin (20) and Magaret (16), especially in schizophrenics. Rabin, from his study of the rank order of the subtests in several clinical groups and normal individuals and from empirical observation, arrived at a *schizophrenic index*, (consisting of the ratio of the sum of the weighted scores of Information, Comprehension and Block Design to the sum of the scores of, Digit Symbol, Object Assembly and Similarities) which distinguished reliably between schizophrenics, on the one hand, and normals, neurotics and psychopaths, on the other. A later study (21) also employs it in distinguishing schizophrenia from manic depressive psychosis. Magaret's (16) study of schizophrenics, paretics and pre-senile individuals introduced a different approach in the treatment of Wechsler-Bellevue data. Her interest was in what she calls "the *intra-individual differences in intellectual functioning*" and has consequently calculated the deviation of each subtest from the mean of all the subtests of each case. The comparison of these deviations for the several groups studied serves as a basis for her conclusions. She found, by means of this method, that her schizophrenics can be differentiated from non-psychotics with all but three subtests (Similarities, Digits and Block Designs) and that the paretics differ from non-psychotics in only two subtests—Vocabulary and Digit Symbol. Her contention is that these psychoses resemble "premature aging" since the comparison of young subjects with those of later maturity show a similar trend. Wechsler's clinical findings and Rabin's rank orders of subtest scores in schizophrenia do not substantiate this contention. A more recent study (22) on 100 psychotic and non-psychotic individuals aged 60-84 shows that even old age results of "highest and lowest ranking tests" do not compare so well with schizophrenics as thought by Magaret. Information is highest for both groups; next in order are Comprehension and Similarities for the old age group, while Object Assembly and Block Designs rank high in the schizophrenics. There is agreement on Digit Symbol and Picture Arrangement being among the lowest ranking for both groups. However, also Block Designs is among the lowest in the old age group, while Arithmetic is very low in schizophrenia. Thus, the conclusion about the "premature aging" of schizophrenics is, at best, of doubtful validity. In the same study, possible psychometric patterns in the two major psychoses of the senium (arteriosclerosis and senile psychosis) were investigated. Since the groups were not equated for age and other factors, it was felt that whatever differences were present were accounted for by the differential age factor, rather than differential psychiatric diagnosis. The findings of this study are also in agreement with those of Goldfarb, who states that ". . . the trend to decline with age is more consistently observed among the performance tests, all of which are timed (10, p. 66)." The "power" tests remain relatively unaffected by age.

Variability of subtest scores is essentially what is meant by *scatter*. There is little doubt among most investigators that it is characteristic of the more severe psychopathological conditions. However, the results of Gilliland and collaborators (9) are largely negative in this respect. The findings are based on 87 schizophrenics, 92 paretics, 32 manics and smaller samples of psycho-

neurotics, alcoholics and mental defectives. The subjects who scored satisfactorily on the Elgin Test Reaction Scale were selected for the study. No age, intelligence or educational factors were controlled. They found that there was some variability in all the groups, but no significant differences, in this respect, between the groups were obtainable. They also found that the schizophrenic group was "less variable" than the control group consisting of 100 hospital attendants. From the obtained results the conclusions are chiefly that whatever loss may take place it is general rather than selective or specific and that normals tend to show more variability than abnormal patients. These results are definitely in disagreement with those of Wechsler (31), Rabin (20) and Magaret (16). Neither are the results of the Menninger group, quantitative (7) as well as qualitative (26), consistent with Gilliland's findings. The discrepancy between these investigations can be mainly explained in terms of differential sampling. More specifically, while the patients, on which Gilliland's report is based, were selected by means of a definite quantitative criterion, assuming "proper attitude" to the examination, all the other studies omitted such a strict qualification. Consequently, the other studies included many patients of a widely differing psychiatric condition, instead of applying a uniform criterion. Hence the differences in variability. Gilliland eliminated that evident variability by excluding the majority of really "variable" cases, who are the less cooperative ones and those whose attitude is not up to par.

Cases of Head Injury. A recent British (27) study of intellectual loss following head injury employed the verbal scale of the Wechsler-Bellevue with some slight modifications. Reynell devised a "differential test" in order to determine intellectual deficit. He obtains the IQ differences based on two series of subtests. Series A consists of Vocabulary, Information and Comprehension, while Series B consists of the three remaining verbal subtests (Similarities, Digits and Arithmetical Reasoning). When the difference between the two IQs reaches "double figures," the test is positive for intellectual deficit. Series A tests were found to "hold up" in cerebral injury, while Series B tests tend to "fall away" in that condition. More than 500 war casualties with head injury were examined by this method. Of these, 120 showed positive results on the A minus B series, the difference in IQs being more than ten points. Of these, 95 cases had severe or moderate head injury. Twenty cases had a recent injury and 80 per cent of the remaining 100 cases were permanently invalidated as far as further war service is concerned. On the other hand, 80 per cent of those who had moderate or severe head injuries, but did not show a positive (A-B) score were returned to duty. The conclusions favor the use of this measuring device, not only as an indicator of present intellectual loss, but as a prognostic agent as well. However, caution should be applied, since the recency of the injury may produce unduly unfavorable results. "The longer the period between the head injury and the testing, the more significant are the findings (27, p. 719)." Some additional evidence, though not very well quantified, hints at the absence of positive results in the affective, non-organic disorders.

Cultural and Racial Variations. A rather extensive study of more than four hundred white and negro criminals, employing refined statistical techniques, was published under Machover's (15) authorship. Three major sets of comparisons compose the main object of the investigation. Firstly, negro criminals of widely divergent cultural backgrounds (South vs. North) are compared, while most other factors are well controlled. Secondly, white and negro criminal groups matched for age, education and IQ are compared. Finally, a comparison

between white criminals and non-criminals of the same race is investigated. The groups were investigated with the prospect of discovering characteristic "patterns." The answer to the question whether there are characteristic group patterns is given in the affirmative. The first comparison yields the conclusion that ". . . the culturally restricted Southern Negroes do best in Verbal Comprehension and Similarities and worst in Performance, Digit Symbol, Block Design and Picture Arrangement (15, p. 83)." Whites vs. Negroes show superiority in Arithmetic and Digit Symbol, while the Negro group is better in Similarities and Picture Arrangement. Not all of these differences are statistically reliable. The non-criminal group is superior in Information and Comprehension, while the criminal group shows superiority in Picture Completion, Object Assembly and Digit Retention.

This investigation shows awareness of the shortcomings of studies with pathological material which preceded it. Groups were equated and matched for age, intellectual level and other major factors that should be controlled during the quest for *characteristic patterns*. The findings, however, as is true in many pattern studies show insufficient relationship to actual psychological traits.

Scatter and Patterns. Scatter has been referred to as "the differences in subtest scores . . . (28, p. 276)." It is another expression for variability of scores which ideally should be identical or at least, close in quantitative value to each other. The major hypothesis, of the investigations dealing with this problem, is that different groups show different degrees of variability in the same or different subtests. A characteristic constellation of variabilities which is presumably fairly stable is called a *pattern*. The term has been loosely used in this connection and different methods for its determination have been employed by several investigators, as follows:

1. *Means of subtests* for the groups have been used as the only (4, 5, 8) or partial (11, 20) basis for the comparison of groups. This method is especially vulnerable and unreliable when the age and intelligence as well as cultural background factors are poorly controlled or not controlled at all.

2. The *rank order*, within the individual record or of the group means of subtests has also been used, largely as a preliminary measure (20, 21), especially in computing lists of tests which do or do not "hold up" in certain conditions of abnormality.

3. As a result of the preceding approaches and as a result of empirical data, various characteristic *Indexes* have evolved. Some are the products of ratios of certain subtest combinations to others (13, 20, 21) while others consist of differences between certain combinations (27). The latter method, especially, is a refinement of the Verbal Minus Performance Sign arrived at by several investigators (7, 13, 15, 20, 31).

4. *Intra-individual* differences in performance had been suggested as a more reliable measure of variability. The first investigation employing it is the one by Magaret (16) while others followed suit (17, 23, 24). The deviation of each subtest, from the mean of all the subtests is the measure used. In a more qualitative sense its use is amply illustrated by Wechsler (31).

5. Finally a number of other measures of scatter and combinations of subtests have been advocated. Schafer and Rapaport (28) suggest the computation of the difference between each subtest score and the vocabulary score as well as "certain internal comparisons" which are not very specific, and basically not different from some measures previously applied. There is also something to be said for the interpretation of the individual scatter (26, 31). However, the validity of its interpretation is much more dependent upon the clinical judgment and experience of the examiner, than upon an experimentally derived and statistically reliable pattern.

RETEST DATA WITH CLINICAL MATERIAL

As part of an attempt to devise a battery of psychometric measures which will be effective in forecasting the results of insulin treatment in schizophrenic patients, Wechsler, Halpern and Jaros (33) used several subtests of the Wechsler-Bellevue Scales (Comprehension, Information and Similarities) as part of a larger battery. The test retest differences, before and after treatment, were correlated, for a large number of tests in 15 schizophrenic individuals, with the psychiatric conditions of the subjects, 6-18 months after the treatment. The Similarities test, showing a coefficient of colligation of .50 and per cent agreement of 73, was the only subtest included in the final predictive collection of 5 different tests which most effectively forecast the psychiatric condition of the patients. The authors add, however, that no single test is as effective as the combined results of the entire battery.

A more direct study with the Wechsler-Bellevue and *fluctuation* of its results in schizophrenic patients was made by Rabin (24). In this investigation the retest results on thirty schizophrenics were compared with those of thirty non-schizophrenic hospital patients, consisting largely of manic depressives, psychoneurotics and a variety of other diagnoses. A mean interval of more than a year between tests was allowed. The correlations showed $r = .55$ for the full Wechsler-Bellevue results between the two tests in the schizophrenic group, while the other group yielded a coefficient of .89. There was improvement in the mental level of both groups. This increment was attributed to the improved "clinical picture" and to the practice effects that might be "involved in the employment of the same scale." The verbal scale showed greater stability (less change and higher correlation) upon retest than did the performance scale. The Comprehension test showed the lowest coefficient of correlation in the retest results of the schizophrenic group. An intra-test deviation analysis showed that the deviations of six of the battery's ten subtests changed upon retest, in the direction of the non-psychotic group of Magaret, included in this study for comparison. The results of 60 reexamined patients were reported in another study (23). This group included schizophrenics, manics, psychoneurotics and other diagnostic classifications. The test-retest coefficient of correlation ($r = .84$) shows a degree of test stability which compares well with the findings obtained in normal individuals. It speaks for the reliability of the Wechsler-Bellevue scales as well.

Too little well-controlled work with retest data is available. Control of the age factor, duration of psychosis, and correlation with the clinical and psychiatric picture of the patients are major desiderata in studies of this type. Patients of one diagnostic group with well defined criteria and well defined changes in the intervening interval should be studied thoroughly. Provisions for the elimination of practice and familiarity effects by means of a parallel series of scales should also be made in order to throw some light on the concomitant psychometric changes that accompany the course of the mental disease.

MISCELLANEOUS STUDIES WITH THE WECHSLER-BELLEVUE SCALES

A very significant and theoretically interesting study with the Wechsler-Bellevue was made by Balinsky (3). Starting with the hypothesis that mental organization may differ at different age levels, he applied the method of factor analysis to all the subtests (excepting Similarities) of the Wechsler-Bellevue scales which were administered to several age samples (9 years; 12; 15; 25-29; 35-44; and 50-59). Different descriptive factors were obtained at the various

age levels. This is largely, as the author writes, because ". . . the same abilities are not tapped by tests of intelligence at various age levels, or that the abilities themselves are not constant (p. 221)." Despite the variation in factors at the several age levels, some, like the performance and verbal factors, are quite consistent. The memory factor appears in age groups 25-29 and 35-44 only, and the G factor present in the nine year old group remains "latent" and reappears, though more weakly, in the 50-59 year group. The theoretical implications and the needs for age control in intelligence test studies become quite evident. It may also be of interest to study Balinsky's several descriptive factors at different age levels, with different clinical types.

Special conditions also led to another development in the use of the Wechsler-Bellevue, i.e., its partial application. The time limitation confined Lewinski (14) to the verbal scale only. Because of the blindness of the subjects, Hayes (12) too was limited to the verbal scale. Trist (29) uses several of the verbal subtests as a part of a brief battery for individuals of low grade intelligence. A "short form" of the Wechsler-Bellevue, based on the results of three verbal subtests (Comprehension, Arithmetic and Similarities) was devised by Rabin (25). High correlations with the full scale and other tests were obtained.

SUMMARY AND SUGGESTIONS

The foregoing pages clearly indicate that the Wechsler-Bellevue Scales have stimulated considerable psychometric research and have supplanted some time-honored diagnostic tools. The reliability and validity of Wechsler's scales, as a whole and in part, have been proved in several studies. The consensus of opinion is that the test correlates highly with some of the best measures of intellect and that it tends to differentiate better than other measures between the dull and feeble-minded. The literature produces a dissenting opinion which is undocumented and statistically unproved. It also tends to narrow the IQ range as compared with other tests. There is considerable evidence that the Verbal Scale correlates more highly than the Full Scale or Performance Scale with most intelligence tests. The Verbal Scale compares well with other tests in predicting academic success at the college level; the Performance Scale is practically useless in this respect.

Because of its particular structure as a point scale, the Wechsler-Bellevue is easily adaptable to research in the field of mental deficit in special clinical groups in particular, and to research involving the differentiation of various groups in general. Several approaches, from a statistical and technical viewpoint, in the analysis of test findings, have been made available. The differentiation of groups by means of their attained mean scores on the various subtests is the most obvious method. This however, does not take the absolute total score magnitudes into consideration. Ranking the means of subtest scores for groups is a method which circumvents this difficulty. The differences between Verbal and Performance IQs have also been used widely. A difference in favor of the Verbal Scale, following Babcock's rationale concerning the preservation of verbal capacities and the reduction in new learning in deterioration, is probably indicative of some pathological conditions (usually schizophrenia); while a difference in the opposite direction tends to be indicative of psychopathic personality. A verbal dominance akin to that found in psychopathological conditions may also be found in Southern negro criminals. A more sophisticated method developed, deals with intra-, instead of inter-personal variations. The deviation of each subtest from the mean of all subtests in the same indi-

vidual has been used as a yardstick. This method tends to produce some results which are at variance with those obtained with the simpler methods. Special *Indexes* based on ratios between the sums of the scores of some subtests (for schizophrenia and psychopathic personality) and on differences between such combinations (cerebral damage) have also been devised. Several other methods of intra-individual variation have been suggested, but not investigated. It seems to some clinicians that the use of this method in the description and diagnosis of individual cases is possible despite the absence of sufficient statistical support. Such procedure would, to a large extent, be intuitive and dependent on the degree of clinical insight and experience of the examiner. Variability, according to most investigators is characteristic of pathological conditions. The data tends to show that the patient's emotional condition and attitude are largely responsible for this variability. A study in which the patients were selected on the basis of their good attitude in the testing situation failed to attain more variability than in normalcy.

The fact remains that the various measures of scatter and variability, the different patterns, have succeeded in differentiating *groups* but not *individuals*. The patterns are characteristic enough of certain groups, but mask the peculiarities of some individuals within those groups. Hence, thus far, on the basis of the Wechsler-Bellevue patterns we have group, but not individual, diagnosis. There is insufficient agreement even in those group differentiations. The studies failed to control all of the most important factors; they controlled some. Hence, variation in findings. Age, race, schooling, intellectual level, cultural background and degree of cooperativeness are major factors which have not been equally controlled in the several studies. For this reason, the results are not comparable. In case of psychopathological material, the diagnostic criteria, which may differ from one institution to another, must also be reckoned with if exact and comparable data is to be produced. Patterns obtained, after the above-mentioned factors are taken into consideration, may achieve a status of a differential diagnostic tool in *individual cases*. In order to achieve this degree of accuracy, the cooperative effort of several institutions may be required. In the meantime, the individual variability analysis and descriptions, and the utilization of the broad hints from the group studies have their place in clinical practice. In this connection, more qualitative studies of Wechsler-Bellevue responses and more detailed analysis of their content are wanting. Also, the investigation of several factors (based on factor analysis) in different clinical groups and at different age levels, rather than considering the subtests as *functional unities*, is an untapped source of important data.

The psychometric literature, especially dealing with psychopathological material, is lacking in retest data. Long range retest studies are rare. Only a few small attempts in which the Wechsler-Bellevue is employed, have been made. Such studies do not only throw some light on the problem of reliability, but also offer more insight into the problem of *patterns*. Quantitative measures of attitude, or behavior schedules administered to patients examined and re-examined will shed further needed light on concomitant intellectual conditions and psychometric correlates of various behavior and personality disorders.

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"ONE HUNDRED YEARS OF AMERICAN PSYCHIATRY"

A SPECIAL REVIEW*

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In those halcyon postwar days when even librarians shall have succumbed to the pressure of streamlined living and replaced the complex Dewey "classification" with a simple chronological classification, the library browser's attention will be drawn immediately to this robust Adonis of a volume standing out so prominently among the war-starved runts of 1944. He will be impressed with its structure: the half-rag specially water-marked paper, the wide margins, the attractive type, the gravure illustrations (of persons and institutions important in the history of psychiatry), the specially designed emblem and the generally outstanding printing job.¹ His surmise that the responsibility for the production of the volume must have been a true bibliophile's will gain considerable support from such items as the account of the pains taken to unearth the signature of Dr. Samuel White, one of the original thirteen founders.

Even the more careful and sophisticated reader will agree with the casual browser that the work, except for the few typographical errors which have eluded the proof readers, meets the highest standards of bookmaking and comes close to the limit of realistic bibliophilic aspiration for a volume of this nature. In some ways, however, so high an achievement in form places an unfair burden on the contributors for, both consciously and unconsciously, it sets the reviewer to expecting from them at least equal achievement in content. A set of this kind is particularly difficult to avoid in the case of a work by psychiatrists since they above all others may be expected to see beyond externals.

The volume consists of two introductory statements and fifteen chapters (the latter varying in length from fifteen to ninety-four pages) contributed by thirteen different authors.

In presenting the volume, Gregory Zilboorg, who appears to have been the managing editor and coordinator, describes the goal as the achievement of "a historical synthesis of a century of American psychiatric evolution . . . a survey of psychiatry as a growing cultural force . . ." Psychiatry is treated "within the frame of reference which a synthesis, not a symposium, imposes . . ." He elaborates further with a statement to the effect that uniformity of perspective rather than uniformity of opinion was aspired to by the authors of the several chapters. J. K. Hall, in the introduction, considers the American geographical and historical setting in which the American Psychiatric Association (then the Association of Medical Superintendents of American Institutions for the Insane) was founded in 1844 and describes the conditions of the inception and production of the volume.

The first chapter, by R. H. Shryock, presents the beginnings of psychiatric history in this country from colonial days to the founding of the Association. H. E. Sigerist follows with the story of psychiatry in the various European

* Hall, J. K., Zilboorg, G., Bunker, H. A. (Eds.). *One Hundred Years of American Psychiatry*. New York: Columbia University Press, 1944. Pp. xxvi+649, numerous illustrations.

¹ The volume was actually designated by the American Institute of Graphic Arts as one of its selections for the month of July, 1944.

countries during the middle of the 19th century. This serves as a backdrop against which Winfred Overholser depicts the founding of the Association and the personalities of its thirteen founders. The longest chapter (94 pages), on *The History of American Hospitals* by Dr. Samuel H. Hamilton follows. The next three chapters: *A Century of Psychiatric Research* by J. C. Whitehorn, *American Psychiatric Literature during the Past One Hundred Years* (77 pages) by H. A. Bunker, and *The History of Psychiatric Therapies* (51 pages) by William Malamud, form an inter-related group. Albert Deutsch then presents *The History of Mental Hygiene*. Another related group is formed by the three chapters on *Military Psychiatry*, the first and last by Albert Deutsch, on the Civil War and the World War II periods respectively, and the second by Edward A. Strecker on the World War I period. The last four are relatively independent chapters: *A Century of Psychology in its Relationship to Psychiatry* by T. V. Moore, *American Psychiatry as a Specialty* by H. A. Bunker, *Legal Aspects of Psychiatry* (78 pages) by Gregory Zilboorg, and *The Influence of Psychiatry on Anthropology in America during the Past One Hundred Years* by Clyde Kluckhohn. Except for those whose length is indicated in parentheses, the articles run from approximately fifteen to forty pages.

The intrinsic difficulty of the task of reviewing this multi-authored volume can be lessened to some extent by first considering briefly the individual contributions which are of relatively less importance to the psychologist, by then considering at greater length those which are especially pertinent for him, and by following it finally with a consideration of the volume as a whole.

The two background chapters provide the appropriate screen against which to see the developments of psychiatry in the last one hundred years. (One wishes that the Sigerist chapter were a little fuller.) Overholser provides a good start on this with his portraits of the founders. Hamilton's chatty chapter is full of interesting and important facts about the development of institutional psychiatry from its beginnings in the workhouse and almshouse through the lunatic asylum and lunatic hospital to its present status as represented in the state and private hospitals. He discusses the various aspects of psychiatric administration and provides several valuable statistical tables. The presentation, however, suffers somewhat from insufficient organization. It is a little strange, too, to find in a chapter on "American Mental Hospitals" no mention of Bryan at Worcester and Read at Elgin, two superintendents who have done so much in the recent period to raise the standards and set the goals of state hospitals. (In fact it is surprising that Bryan's name does not appear at all in the volume except for Bunker's listing of his book on *Administrative Psychiatry*. Present-day administrators do not fare well at the hands of these psychiatric historians even when their influence, direct and indirect, on research, therapy and administrative procedures has been great.)

The chapters on Literature (Bunker), Therapy (Malamud), and Legal Aspects (Zilboorg) are the high lights of the volume. It is difficult to choose among them—they are all of such excellent quality. Each may, however, be singled out for its particular strength: the Bunker article for its careful, smooth scholarship and its accurate tracing of an important point of view; the Malamud article for its effective organization and clear presentation of a difficult topic; and the Zilboorg article for its lively and detailed presentation of a fundamental social psychological problem.

It appears to a psychologist that Bunker's article misses the part played by the more strictly psychological journals such as the *Psychological Bulletin*, the *Journal of Abnormal Psychology*, the *Psychological Clinic* and the *American Journal of Psychology* in helping to spread psychiatric notions. (He lists the

first three as "psychiatric" journals!) When it is considered that the first American psychological journal was founded in 1887, 43 years after the founding of the first psychiatric journal, the contribution seems considerable. Actually he himself has many references to articles in psychological journals. Thus, of the series of some half-dozen articles by Adolf Meyer appearing during the period 1903 to 1911, referred to by Bunker as "a group of articles which collectively considered, form without any doubt, in their path-breaking character and their enormous influence upon American psychiatry, the most original and the greatest single contribution to American literature,"² three were published in psychological journals (*American Journal of Psychology* and *Psychological Bulletin*). This minor flaw is, of course, negligible when compared with the detailed and thorough portrayal of the development of the functional as opposed to the anatomical point of view, as well as of other aspects of psychiatric progress reflected in the literature.

The article by Malamud lucidly and succinctly presents the evolution of therapeutic notions in American psychiatry. His account impresses one with the important part played in this development by laymen such as Dix, Tuke and Beers, persons who could see the problem either from the very outside or from the very inside. The reader cannot help feeling that an important lesson is here to be learned, one which has important implications for the current controversy with respect to medical care, particularly in relation to the position taken by some medical groups that such care is a strictly medical problem.

Zilboorg's chapter on legal aspects traces the successive advances and retreats in the battles between enlightened psychiatrists holding for the existence of a pathology of feeling without a pathology of intellect ("the irresistible impulse") against unenlightened law which insists on pathology of intellect as the criterion of insanity. The essay very properly revolves mainly about Isaac Ray, a striking instance of the man much ahead of his time.

The chapter by Deutsch on mental hygiene sets forth in very adequate fashion the development of this important aspect of psychiatry as related to other social developments of the period.

The three chapters on military psychiatry should be made required reading for recent critics of the "I-heard-of-a-case" school (the graduate department of Stanley Cobb's "I-know-a-case" school) who make wide-sweeping criticisms on the basis of isolated instances and minor imperfections. The Strecker chapter strikes one as being somewhat too detailed for this type of volume, but the three articles together certainly impress the reader with the great strides made by psychiatry in dealing with military problems, despite the great handicaps with which it has had to contend.

Psychiatry as a Specialty (Bunker) is an interesting chapter but its purpose, at least to the psychologist, is somewhat obscure; implicitly or explicitly its contents are to be found in other chapters.

The chapter on anthropology by Kluckhohn really belongs with the three superior chapters mentioned earlier. The only reason for not having included it with the others is its quite different content. From a dynamic psychological standpoint it is the most sophisticated of all the chapters, in fact the only one which really probes below the surface. Besides being excellently documented in the region of overlap of anthropology and psychiatry, a thorough grasp of the

² If not explicitly, at least implicitly, the volume is dedicated to Adolf Meyer. His is the only portrait of a living person included, and after Freud, his name occurs most frequently in the index. The evidence for his great influence permeates almost every chapter.

relationship between the two is revealed. It recognizes the debt which anthropology owes to psychiatry but at the same time delineates anthropology's own field of activity and point of view, both of which it expects to have recognized in its relations with psychiatry. The important part which Sapir has played in the association of the two disciplines is duly recognized and emphasized.

We may now turn to a consideration of the two chapters which are of special importance for psychologists, viz., Whitehorn's on research and Moore's on psychology.

Although by the ordinary standards of journal articles Whitehorn's chapter is an adequate sketch of the high points of psychiatric research, in the present setting it is disappointing. The author has missed an unusual opportunity to carry through the difficult task of which he is capable, viz., to indicate, at this strategic stage of the development of psychiatry, the meaning and direction of psychopathological research in America, both past and present, to evaluate this research and to point out the promising lines for future development. (It was particularly important not to miss this opportunity because of the narrow evaluational article by Myerson in the anniversary issue of the *American Journal of Psychiatry*.) Such an exposition would necessarily have resulted in one of the longest articles in the series; instead we have one of the shortest. Aside from its brevity, it is rather poorly systematized, only superficially evaluative and in its discussion of research developments mainly organized around the very inadequate and secondary classification of geography, rather than that of concept. A striking instance of the incompleteness of the production is the omission of even the mention of Charles B. Dunlap's work in pathology, work which Bunker, in the very next article in the volume, calls "one of the outstanding contributions to American psychiatric literature" and representing the major work of "one of the most thorough, scrupulous and rigorously scientific workers whom American psychiatry has known."

Under such circumstances it is not surprising that the minor contribution which psychology has made is not recognized. As an instance, let us take the case of McLean Hospital. Whitehorn points out that perhaps the most definite reply to Weir Mitchell's severe criticism (at the semi-centennial meeting of the Association) of the contemporary state of psychiatry was to be found in an account by Hurd "of the provision made for intensive laboratory research in the basic medical sciences of pathology, physiology and biochemistry" at McLean Hospital. The fact "that the major emphasis of this pioneering enterprise was put upon physiology and biochemistry—the study of the living, rather than of tissues post-mortem" was "an interesting indication of the direction of thought." The conscious or unconscious change of "physiological psychology" in Hurd's text to "physiology" in Whitehorn's is a little hard for the psychologist to take! If anything is clear from Hurd's article,³ G. Stanley Hall's article,⁴ Cowles' presidential address,⁵ Hoch's report on Kraepelin,⁶ Cowles' enthusiastic

³ H. M. Hurd. The New McLean Hospital. *Amer. J. Insan.*, 1895-96, 52, 502.

⁴ G. S. Hall. Laboratory of the McLean Hospital, Somerville, Mass. *Amer. J. Insan.*, 1894-95, 51, 358-364.

⁵ E. Cowles. The Advancement of Psychiatry in America. *Amer. J. Insan.*, 1895-96, 52, 384.

⁶ A. Hoch. Kraepelin on Psychological Experimentation in Psychiatry. *Amer. J. Insan.*, 1895-96, 52, 387-396. August Hoch was appointed to be in charge of the McLean laboratories. As part of his preparation he went to study the Wundt-Kraepelin techniques in Kraepelin's laboratory (cf. Hall, *ibid.*).

reception of the *American Journal of Psychology* because of its concern with the "new psychology" and its promise of "concrete application" to the alienist's clinical needs,⁷ and Cowles' article in Hurd,⁸ it is that physiological *psychology* was involved. It was physiological *psychology* in which Cowles was so much interested and towards which he had been directed by Stanley Hall under whom he had taken psychology and with whom, when the latter was medical superintendent (!) of Bay View Hospital for the Insane, Cowles had worked.⁹

If Whitehorn's chapter is disappointing then Moore's is nothing less than distressing, particularly so to the psychologist since it is the one which for him is most important and with which, in this setting, he most naturally identifies. Instead of meeting his expectation, based on the author's standing and peculiar fitness for the task by reason of his expertise in both disciplines, that it will be among the best chapters, he is reluctantly forced to conclude that it is the poorest in the volume. The bases for this judgment are various and lie in the nature of the tone and style, as well as the content.

With respect to style, one can find neither a clear conception of the task involved in the writing of such a chapter nor a unifying principle of organization. There is a tendency to repetitiousness, irrelevancies of a reminiscent and historical nature (cf. pages 468 and 457), and loose writing (e.g., a list of 83 persons is referred to as a table of "several" psychologists, p. 448). In a volume which is on the whole singularly clear of typographical and similar errors, Thurstone's initials are given as "E. L." (p. 449), Harrell is referred to as "Howell" (p. 462) and "psychology" is written for physiology (p. 446). I mention these minor defects not because of their intrinsic importance but because they reflect the more important contentual carelessness which is so frequent.

The combination of a very definite positive view, viz., neoscholasticism, and very definite negative views, viz., anti-sensationalism, anti-behaviorism, and anti- "social-service psychiatry" carry Moore into *ad hominem* arguments, extreme statements and irrelevant criticisms of different schools, criticisms not at all related to the problem of the relations of psychology and psychiatry (cf. the criticism of gestalt psychology, pp. 465-466).

Thus his positive philosophical approach leads him to identify Adolf Meyer with (perhaps unawares) "reviving some of the fundamental concepts of scholastic philosophy" (pp. 455-456, 458). His negative attitude to behaviorism leads to the gratuitous assumption that "Psychobiology . . . had its origin in the hopelessness of the behaviorism of John B. Watson and of the experimental psychology of Knight Dunlap" because, after conducting a course in psychology in collaboration with Watson and Dunlap for one year, Meyer conducted the course alone thereafter (p. 455)! It is, of course, possible that the assumption is correct but Moore offers not the least bit of evidence for this. In fact, certain data available to us make the assumption quite unlikely, at least as it applies to Watson. On one occasion, for instance, Meyer speaks of Watson's work as one of several contemporaneous developments fostering "a wholly unprecedented burst of dynamic interest in man . . . and in the study of the functioning of the

⁷ E. Cowles. The *American Journal of Psychology*. *Amer. J. Insan.*, 1887-88, 44, 544-546.

⁸ H. M. Hurd. *The Institutional Care of the Insane in the United States and Canada*. Baltimore: Johns Hopkins Press, 1916. II, 618-636.

⁹ A. Meyer. In Memoriam, G. Stanley Hall. *Amer. J. Psychiat.*, 1924-25, 4, 151-153. Bay View appears to have been a hospital connected with the Johns Hopkins University Medical School.

human organism as a personality."¹⁰ Further, Watson, in his autobiography,¹¹ expresses his gratefulness to Meyer for coming over to Watson's laboratory each week with his whole staff for the purpose of discussing the manuscript of *Psychology from the Standpoint of the Behaviorist*. To look at the matter from another side, it is a questionable compliment to Meyer to imply that psychology was conceived on the rebound!

His antagonistic attitude to "social-service psychiatry" leads Moore to talk about a "tendency (which) has arisen to eliminate the psychologist from the child guidance clinic and to get rid of all psychometrics (p. 474)." Those well acquainted with the prevailing situation would be surprised at this statement. Actually, when a comparison is made between the data in the table which he has constructed, based on the 1940 Directory, and a similar table found in the 1936 Directory, it will be seen that the trend for New York, the state about which he is most concerned, is actually in the direction of an increase in the employment of psychologists for community clinics. Moore seems to be unacquainted with the New York situation where many of the psychiatric clinics are sent out from the State Hospitals almost exclusively to check on their own adult patients who have been released into the community. For such a purpose only a psychiatrist and a social worker would, except rarely, be necessary.

Moore has misinterpreted, too, the Witmer statement (p. 476) with respect to the dropping out of routine psychological examinations in child guidance clinics. Such a policy does not mean, as Moore thinks, the elimination of the psychologist. Rather does it mean that the psychologist is taking on other, broader, functions just as are the other members of the clinic team whose routine physical examinations and routine family investigations are also being reduced. The trend is one to be welcomed rather than deplored, as Moore would discover if he were to consult the numerous psychologists now concerned with improving the status of clinical psychology. We must also note the several extreme statements in this context, e.g., references to psychologists being "eliminated," "ousted," considered "superfluous" and a reference to a tendency to "get rid of all psychometrics."

In addition to pointing out these inaccuracies two other points should be made with respect to the general tone of the article. I refer to its unwitting arrogance and its lack of dignity. Evidence for the former may be found in what seems to be an underlying assumption of the article, viz., that the term "relationship" in the title refers only to the influence which psychology has had on psychiatry. The considerably greater influence which psychiatry has had on psychology, particularly the influence of Freud and of psychoanalysis, is never even considered. The closing sections, those which discuss the place of the psychologist in the child guidance clinic and the conflict between psychology and psychiatry in the 1916-20 period, are rather picayune. The reader cannot avoid making the obvious but painful comparison of Moore's article on psychology with the modest, dignified and mature presentation of Kluckhohn on anthropology. In the latter case the reader is left with the feeling that the author knows just where the stand should be taken in a relationship between two disciplines, each of which has its own contribution to make. In the case of psychol-

¹⁰ A. Meyer. The Organization of Community Facilities for Prevention, Care and Treatment of Nervous and Mental Diseases. *Proc. First Internat. Cong. on Mental Hyg.* New York: Internat. Cong. for Ment. Hyg., 1932, p. 246.

¹¹ Carl Murchison, (Ed.). *History of Psychology in Autobiography*. Vol. III, Worcester: Clark Univ. Press, 1936, p. 279.

ogy, he is left wondering what all the lamentation is about and with his respect for it anything but enhanced. One could go on with other instances of these more formal inadequacies but it is necessary to turn now to the fundamental aspects of the contribution, viz., its content.

What may one reasonably expect to find in an article on the relationship of two such disciplines as psychology and psychiatry? Essentially the following: A consideration of the intellectual influences, in the sense of ideas, methods, points of view, and the "propagandist" influences, in the sense of aid of a non-professional kind such as promotive, of one discipline on the other, whether they be direct or indirect, definite or presumptive. One might expect, in addition, a discussion of the working relationships of the disciplines in the past and an evaluation of the outlook in this respect for the future.

Of these various aspects Moore limits himself almost entirely to the intellectual influence of psychology on psychiatry and he does this in such a way that it is generally difficult to tell whether the influence is direct or indirect, definite or merely presumptive. He mentions not at all the propagandist contributions of psychology, as seen, for instance, in Hall's influence through the founding of journals and the support of various movements, and James' influence in the founding of the mental hygiene movement, which is even greater than Deutsch, in the chapter on "Mental Hygiene," has indicated. He touches on the relations of the two fields but never in a manner which would indicate that the true interpenetrative complexity of the relationship has been recognized.

Early in the paper Moore presents a list of 83 psychologists (actually of those included, two, Rorschach and Rosanoff, were *not* psychologists in any technical sense or in the sense in which he uses the term) "whose names were looked for in 93 textbooks of psychiatry appearing in the United States from 1861 to 1942, and gives the number of times a reference to their work was found." There are no explicit conclusions drawn from the list in the body of the article, but the implication, on the basis of the discussion which precedes it, is that very little psychological material gets into psychiatric texts. That this is true I would not dispute, but I am disturbed about the method used to arrive at the conclusion. In the first place, the list is motley and strange, containing the names of persons who, however important their contribution to other fields, have done very little related to psychopathology, e.g., Hartshorne, Osgood, Otis, Washburn. Then it omits the names of persons who with much more reason should have been included, such as, among Americans: Bronner, Doll, Franz, G. H. Kent, Landis, Sidis, F. L. Wells, Witmer.¹² (His Europeans are more adequately selected.)

But assuming that the list contained only appropriate names, the compilation of such a list is in itself naive and at best pseudo-objective. Influence, as any historian of ideas knows, is frequently most difficult to trace. The fact that a name is not mentioned in a book is no criterion that the author was not influenced by the person involved. This is true for two reasons: (1) textbook writers, especially the older textbook writers and even more especially non-

¹² The name of H. Gruender is included in the list. Since the name aroused no associations, psychological or otherwise, the APA yearbook, the *Psychological Register*, Hunt's *Personality and the Behavior Disorders* and several histories of psychology were searched but no reference could be found. Finally, a reference was found in *Minerva* (1930) which indicated him to be Professor of Psychology at St. Louis University and in the *Psychological Abstracts* for 1932 an abstract of a book of his on experimental psychology was found. The excerpt given there provides a cue as to why he did not influence psychiatry.

academic textbook writers, are not accustomed to giving credit or references. (Until recently this was also generally true of elementary textbooks in psychology.) Particularly in psychiatry, where the textbooks are largely concerned with nosology, the theoretical and experimental suppositions are at most implicit. (2) Influence is so often indirect and unconscious that it needs a Lowes or a Boring to unearth it. Thus, supposing Herbart had been included in Moore's list, and it could be shown that Herbart influenced Griesinger profoundly, and that Griesinger in turn influenced the writers of early American textbooks, Herbart might not at all be mentioned by the latter but actually his influence might have been considerable. Historical research unfortunately (or fortunately) needs more than the turning over of the "preparing of a table" to a "statistical assistant (p. 448 n.)."¹³

But, again, the list is after all a minor matter. Any student of the subject knows that the influence of conventional American psychology on psychiatry has not been very great. It is, therefore, particularly disturbing to find that the few major influences have been omitted. G. Stanley Hall is not mentioned at all (except in the list) although there are seven references to him by the other, non-psychologist, contributors. Hall, the propagandist, who gave Freud his first academic hearing, who gave courses in Freudian psychology beginning in 1908 and whose pressure for its consideration remained life-long; Hall, who influenced Cowles in establishing the psychological laboratory at McLean Hospital which had as directors following Hoch, Franz, Wells and Lundholm; Hall, who stimulated Adolf Meyer, by his early interest in child study, to write his first paper on a psychiatric topic—*Mental Abnormalities in Children during Primary Education*¹⁴—and who did so much to make the country child-conscious; Hall, whose students Goddard and Huey (also Meyer's students at the Worcester State Hospital) did the early pioneer work on feeble-mindedness;¹⁵ Hall, whose bravery in handling the problem of sex did so much to break down the first barriers, thus greatly facilitating the later child guidance handling of this and related problems; Hall, whose student Terman achieved so much in the development of the Binet method in the United States and whose student Gesell did so much for other aspects of developmental psychology; Hall, whose journals regularly published material of psychopathological interest; Hall, the ramifications of whose psychological influence are most pervasive in fields related to psychopathology—it is this man who is entirely omitted in the consideration of the influence of psychology on psychiatry.

William James is another major influence whom Moore does not mention except in his list. In the latter it is indicated that text references to him have been found fourteen times, the second highest after Binet who has a score of fifteen. Despite this obvious hint James is not considered and the many aspects of his influence on psychopathology among which were his wide influence through his *Principles* and *Varieties*, and his deep and lasting interest in exceptional mental states (on which he delivered a Lowell Lecture Series) are missed.

¹³ I do not wish to raise a question as to the accuracy of the statistical work in the table, since I have not attempted to check it. However, casual examination of the first standard psychiatric text which comes to hand (Strecker and Ebaugh, 4th ed., 1935) records the name of Kuhlmann in the index—a name which is given a zero frequency in the table.

¹⁴ *First Internat. Cong. on Mental Hyg.*, p. 241.

¹⁵ Cf. H. H. Goddard. In the Beginning. *Train. School Bull.*, Dec. 1943. Hall recommended Goddard for the Vineland position.

His high evaluation of these special conditions led him to state, during the height of the psychophysical period in psychology, that these phenomena threw more light on human nature than did the work of the psychophysical laboratories. James' propagandizing influence, viz., his mental hygiene interests already mentioned, and his influence through students such as Healy, Sidis, Thorndike, Yerkes and Woodworth are forgotten. No recognition is given to the indirect, but nevertheless important, effects of the "humanization not only of psychology but of philosophy through William James' espousal of the characteristically American concepts of pragmatism, instrumentalism, and the humanization of religious experience," of which Adolf Meyer speaks.¹⁶

Boris Sidis, who, at least until 1908 when he took his medical degree, was distinctly a psychologist, is not even mentioned in Moore's list. He thus misses the influence which Sidis, and therefore indirectly William James, had on William A. White with whom the latter worked on dissociated states at the New York State Pathological Institute. White himself says of this association, "It was an exceedingly interesting, valuable, and I believe crucial experience for me personally. Almost without knowing it I absorbed the rudiments of what was subsequently to be the doctrine of the unconscious and accepted in my attitude toward these problems the principle of determinism in the psychological field."¹⁷

Several times (cf. especially pp. 448, 477) Moore refers to a body of experimental data which is available for application to psychiatry. Nowhere, however, does he actually indicate what it is or what its possible applications are. He apparently has reference to the type of data which is so ably presented in the volumes edited by Hunt on "Personality and the Behavior Disorders," but insofar as the article itself indicates these data are illusory. His concluding paragraph says: "When we look back over the relations of psychology and psychiatry in the past hundred years, what a marvelous growth has taken place in each science! Benjamin Rush, just before the dawn of the hundred years we have reviewed, turned to psychology as he found it, but there was little to find. In the years that have elapsed psychology has grown. There is a large body of experimental empirical research in the field of psychology that has never been evaluated for psychiatry; there are methods and techniques that have been developed in psychology that would open up vast tracts of the *terra incognita* of psychiatry. Only when psychiatry is based on a sound and broadly adequate psychology can it make the progress that physiology has made possible for medicine." It is be regretted that Moore has nowhere in the article revealed the actual nature of this body of knowledge or actually described any of these Columbian techniques!

I have considered the specific chapters at lesser or greater length. What is the impact of the work taken as a whole?

In presenting the volume, Zilboorg says that it "will have to be looked upon and stand as a whole," and emphasizes that what was intended was a "synthesis, not a symposium." It is somewhat difficult to appreciate the distinction which he draws between these terms. They would appear to arise from two different universes of discourse and it is doubtful if they can be contrasted in this manner. The symposium, whether in the form of conversation, panel

¹⁶ *Ibid.*, p. 245. Cf. also Coriat's statement that the interest in psychotherapy in the Boston area was probably originally stimulated by James (*Psychoanal. Rev.*, 1945, 32, 2).

¹⁷ W. A. White. *Forty Years of Psychiatry*. New York: Nerv. and Ment. Dis. Pub. Co., 1933. Pp. 20-21.

discussion or round-table, may or may not result in a synthesis depending on the amount of "putting together" of ideas which is achieved.

But terms aside, how successful is the result attained? From several statements which Zilboorg makes, and which are clearly corroborated by the internal evidence, one gathers that the various authors wrote their articles quite independently and that actually, except for dividing up the topics and perhaps discussing a general point of view, little effort was directed towards integration. It would otherwise be hard to explain the amount of duplication and repetition which occurs. The degree of synthesis which is attained seems more or less fortuitously derived from a point of view held in common by several of the contributors rather than from any systematic and deliberate attempt to achieve it.

For many reasons one wishes that there had been less democracy in the process; or to put it more accurately, less *laissez-faire* and more true democracy. It would seem that each author could have been left with "complete freedom of judgment and opinion" and his own "trend and even bias" and still a synthesis achieved beyond one which consists only of "uniformity of perspective." In a collaborative enterprise of this kind, in fairness to those other important partners in the undertaking, the readers, group acceptance of mutual self-criticism during the process of preparation of the articles would seem to be essential. A final integrating article by the coordinating editor would also have helped. Such a closing chapter would have resulted in a much more complete unification than has been achieved by mere arrangement. It is rather strange and peculiarly unsatisfying from the "closure" standpoint to read through a volume devoted to a hundred years of psychiatry only to end up with a final chapter on anthropology. This very fact would imply that such a goal was never in the true sense envisioned. It is difficult to avoid suspecting that the talk of synthesis involves at least some element of rationalization. Although it is true that the impressionistic technique employed in the organization of the volume partially achieves results of the kind intended, the question arises as to whether a synthesis of mere perspective was not too cheap a price to settle for; the volume as a whole deserved a higher level of synthesis.

The shortcomings pointed out in *One Hundred Years of American Psychiatry* should by no means be permitted to divert the reader's attention from the many valuable contributions which the volume makes to the true understanding of the development and place of this related discipline. Some of these have already been discussed; space, unfortunately, does not permit the enumeration and elaboration of the others.

There is one point of paramount importance to psychology which must, however, be mentioned. As the reader progresses through the volume a question arises which becomes increasingly persistent in its demand for an answer: Where is the evidence for the oft-repeated assertion that psychology is the basic science for psychiatry, in the manner in which physiology is for medicine? One must admit that there is little to be found in this volume, and it seems to be generally true that the psychology contributed by the academies has had little influence on the development of psychiatry. An attempt to inquire into the reasons why this plausible hypothesis has not been corroborated goes beyond the compass of a review. However, it is a question which psychology must find the answer to both for its own development as well as for the development of an important section of psychiatry.

PSYCHOLOGY AND THE WAR

Edited by
DONALD G. MARQUIS

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PSYCHOLOGICAL TESTING AND RESEARCH IN THE BUREAU OF NAVAL PERSONNEL: WORK OF THE NAVY'S TEST AND RESEARCH SECTION

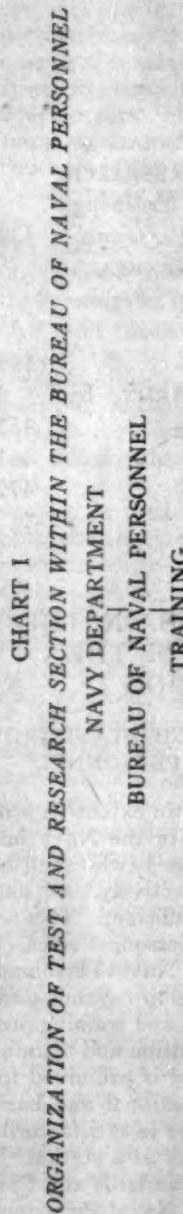
STAFF OF THE TEST AND RESEARCH SECTION*, TRAINING, STANDARDS AND CURRICULUM DIVISION, BUREAU OF NAVAL PERSONNEL

Since 1939, and more particularly since the end of 1942, an extensive program of psychological test construction and other research in the Navy has been directed toward the solution of problems in determining: 1. who shall be admitted to the Navy, 2. how naval personnel can be most effectively used, and 3. by what means training programs can be rendered most efficient. This report describes the development of psychological tests and personnel research carried on by the Test and Research Section in the Bureau of Naval Personnel.

The mission of the Test and Research Section is to develop psychological tests and to carry on research for use in the Navy's personnel and training programs. Assistance has been given in all phases of the classification and training of officer and enlisted personnel from the time an individual is examined for qualification for admission to the Navy, through indoctrinal and basic training and various types of technical preparation, until he is satisfactorily placed in a specific assignment for duty (billet) aboard ship or at a station.

The Test and Research Section is organized within the Standards and Curriculum Division of the Training Activity of the Bureau of Naval Personnel. Four Units comprise the Section:

* The personnel of the Test and Research Section are listed in Chart I.



The following persons were formerly directly associated with the test and research program: Comdr. A. C. Eurich, Lt. Comdr. F. H. Bowles, Lt. Comdr. C. G. Houston, Lt. R. B. Embree, Lt. H. A. Graver, Lt. E. Porter, Lt. (Jg) W. F. Johnson, Lt. (Jg) V. B. Van Dyke, Mrs. H. Blau, Mrs. M. Yampolsky.

The *Selection Test Unit* is responsible for developing and validating aptitude tests for officer and enlisted personnel and advancement in rating examinations for enlisted personnel.*

The *Achievement Test Unit* is charged with constructing examinations to measure the accomplishment of trainees in Navy schools and training programs for officers and enlisted personnel.

The *Research Unit* conducts over-all studies on problems of selection of personnel for training, classification of personnel for duty, measurement of achievement, and other research on problems of training.

The *Radio Materiel Unit* represents an integrated program of test development and research on the selection and training of Radio Technicians, one of the Navy's high priority programs.

The organization and personnel of the Section are shown in Chart I.

The work of the Test and Research Section originates either through requests for tests and research studies made to the Section by Navy activities or establishments or through projects initiated by the Section which it considers to be important. Work has been done for use by, and in cooperation with, other sections within the Standards and Curriculum Division (Billet Analysis Section, Educational Services Section, Instructor Training Section), other divisions within Training (Field Administration Division, Quality Control Division), and other Activities of the Bureau (Planning and Control, Officer Personnel, Enlisted Personnel). The Section has also provided services for the Commander-in-Chief of the United States Fleet, and the Operational Training Commands and the Amphibious Training Commands of the Atlantic and Pacific Fleets.

The majority of projects carried on by the Section are developed as cooperative enterprises, often involving extensive study of the field situation. Visits to appropriate Navy installations are made and conferences are held with the personnel directly concerned. Test construction is based on first-hand study of the situation in which tests are to be used. Research studies usually involve temporary duty assignments to the activities for which projects are developed. Within the Test and Research Section, the work is also characterized by the participation of a number of individuals in the development of tests and research. Although the Section is divided for administrative purposes into the four units, with major responsibility for developing projects usually assigned to one of them, a large measure of inter-unit cooperation among the personnel of the Section is practiced.

DEVELOPMENT OF THE PROGRAM OF PSYCHOLOGICAL TEST CONSTRUCTION AND PERSONNEL RESEARCH

Although psychological tests were used in the Navy as early as 1912, there was no organized program for testing personnel prior to 1924, when a General Classification Test was used to select enlisted men for Navy schools. Other tests were subsequently introduced, and at the time of Pearl Harbor there were in general use the following tests: General Classification Test, Mechanical Aptitude Test, Arithmetic Test, English Test, Spelling Test, and Radio Code Test. Some achievement tests, developed for use in determining qualifications for advancement in rating of enlisted personnel, were also administered.

* Enlisted personnel are "rated" in their specialties, e.g., Gunner's Mate, Radioman, Signalman, and advanced in pay grade within their ratings, from Third Class to Second Class to First Class to Chief, on the basis of studying training manuals, passing examinations, and otherwise demonstrating ability to perform the duties of the next higher grade or level.

Useful as these tests may have been in peacetime, they were not adequate for the personnel and training programs of the expanding Navy. Accordingly, when the Bureau of Naval Personnel was reorganized in the summer of 1942, there was widespread recognition of the need for developing tests of aptitudes and for research on personnel and training programs. To meet this need a Test Construction Group and a Research Group were established in the Standards and Curriculum Section, Training Division, Bureau of Naval Personnel. As the training program increased, the Training Division became one of the major Activities of the Bureau, the Standards and Curriculum Section became a Division within the Training Activity, and the Test Construction Group and Research Group were expanded into the Test and Research Section.

ACCOMPLISHMENTS OF THE PROGRAM OF PSYCHOLOGICAL TEST CONSTRUCTION AND PERSONNEL RESEARCH*

At the time the Test Construction Group and the Research Group were established late in 1942, there had been preliminary studies of the existing aptitude tests for enlisted personnel. Tests had also been constructed for use in procuring men and women officers and recruiting enlisted WAVES.

Since then many tests have been developed for officers and enlisted personnel. Chart II shows the Navy activities in which these tests are used.

CHART II TESTS FOR QUALIFICATION, SELECTION, AND CLASSIFICATION *Used in Qualifying Personnel for The Navy, in Selecting Personnel for Training and in Classifying Personnel for Duty*

OFFICERS

AT OFFICES OF NAVAL OFFICER PROCUREMENT

Basic Test for all Applicants
Officer Qualification Test
Special Test for Officers for Directing Cargo Handlers
Officer Qualification Test—Form 10

IN RESERVE MIDSHIPMEN'S AND NAVAL TRAINING SCHOOLS AND NROTC UNITS

Basic Test for all Trainees
Officer Classification Test
Tests Available for Use on Experimental Basis
When Deemed Advisable by Interviewer
Biographical-Preference Inventory
Officer Personal Inventory
Tests for Selection for Training as Radio Specialists
Pre-Radar Battery
General Mathematics Test
General Physics Test

Test for Selection of Tactical Radar Officers CIC Aptitude Test

AT OTHER ACTIVITIES

Tests for Advanced Classification Purposes
Naval Training Center (Miami)
Officer Classification Test
Sonar Pitch Memory Test
Pre-Commissioning Training Schools:
NTSch (Destroyers), NOB, Norfolk;
APA Pre-Commissioning Training Center, Seattle;
CVE Pre-Commissioning Training Center, Bremerton
Officer Classification Test
Officer Personal Inventory (on experimental basis)

ComPhibTraLant and ComPhibTraPac
Officer Classification Test
Officer Personal Inventory (on experimental basis)

* In the development and evaluation of psychological tests and in the conduct of research, the Bureau of Naval Personnel has been materially assisted by a number of projects developed under the National Defense Research Committee.

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ENLISTED PERSONNEL

AT RECRUITING AND PROCUREMENT OFFICES

Basic Tests for Men Applicants

General Classification Test
Radio Technician Selection Test

Test for Applicants for Women's Reserve (Enlisted)

Enlisted Qualification Test

Tests for Selection of Combat Aircrewmen

General Classification Test
Mechanical Comprehension Test
Airplane Matching Test
Radio Code Test
Clerical Aptitude Test

AT NAVAL TRAINING CENTERS

Basic Tests for all Recruits

Basic Test Battery
General Classification Test
Reading Test
Arithmetical Reasoning Test
Mechanical Aptitude Test
Mechanical Knowledge Test (Mechanical)
Mechanical Knowledge Test (Electrical)
Clerical Aptitude Test
Spelling Test
Radio Code Test

Special Tests Given to Men Who Have Been Screened by the Basic Test Battery

Mechanical Comprehension Test
Airplane Matching Test
Radio Technician Selection Test
Sonar Pitch Memory Test
Literacy Test
Non-Verbal Classification Test
Winchmen and Hatchmen Selection Test
Eye-Hand Coordination Test
Enlisted Personal Inventory
Pre-Radio Materiel Final Achievement Examination

AT CLASSIFICATION CENTERS

Tests Available for Use at the Discretion of the Officer-in-Charge

Basic Test Battery
General Classification Test

Reading Test

Arithmetical Reasoning Test

Mechanical Aptitude Test

Mechanical Knowledge Test (Mechanical)

Mechanical Knowledge Test (Electrical)

Clerical Aptitude Test

Spelling Test

Radio Code Test

Basic Test Battery (Fleet Edition)

General Classification Test
Arithmetical Reasoning Test
Mechanical Aptitude Test
Mechanical Knowledge Test
Electrical Knowledge Test
Clerical Aptitude Test

Other Selection and Classification Tests

Radio Technician Selection Test
Non-Verbal Classification Test
Literacy Test
Winchmen and Hatchmen Selection Test
Sonar Pitch Memory Test
Digit Memory Span Test (Recorded discs) Auditory Test No. 3
Sentences in Noise (Recorded discs) Auditory Test No. 8
Speech Interview
Enlisted Personal Inventory

ON SHIPS AND AT SHORE STATIONS WHERE LARGE SCALE TESTING PROGRAMS ARE NOT CARRIED OUT

Tests for Classification Purposes

Basic Test Battery (Fleet Edition)

General Classification Test
Arithmetical Reasoning Test
Mechanical Aptitude Test
Mechanical Knowledge Test
Electrical Knowledge Test
Clerical Aptitude Test

ACHIEVEMENT EXAMINATIONS

Used to Measure Achievement in Training

OFFICERS

EXAMINATIONS FOR RESERVE
MIDSHIPMEN'S AND NAVAL
TRAINING SCHOOLS

Reserve Midshipmen's Schools' (Deck)
Standardized Examination
Pre-Radar Final Achievement Examination
CIC Final Achievement Examination

ENLISTED PERSONNEL

EXAMINATION FOR NAVAL TRAINING
CENTERS

Recruit Training Final Achievement Examination

EXAMINATIONS FOR NAVAL TRAINING
SCHOOLS

Basic Engineering Final Achievement Examination
Diesel Final Achievement Examination
Diesel Performance Test
Electrical Final Achievement Examination
Fire Controlmen Final Achievement Examination
Gunner's Mates Final Achievement Examination
Gunner's Mates Final Achievement Examination—Directions for Administering and Scoring

Gunner's Mates Identification Tests

Gunner's Mates Performance Tests

Gyro Compass Final Achievement Examination

Quartermasters Final Achievement Examination

Radar Operators Final Achievement Examination

Radio Final Achievement Examination

Radio Materiel (Pre-Radio Materiel) Final Achievement Examination

Radio Materiel (Elementary Electricity and Radio Materiel) Final Achievement Examination

Signal Final Achievement Examination

Signal Performance Tests

Storekeepers Final Achievement Examination

Torpedomen Final Achievement Examination

Yeomen Final Achievement Examination

OTHER ACHIEVEMENT EXAMINATIONS

Lookout Final Achievement Examination
Spelling Achievement Examination
Telephone Talker Final Achievement Examination
Check List for Correct Handling of Sound-powered Telephone

EXAMINATIONS FOR ADVANCEMENT IN RATING

*Used by Boards Examining Candidates for Advancement in Rating*SEAMAN, SPECIAL, AND COMMISSARY
RATINGS

Fundamental Knowledge Required of all
Men in the Navy
Seaman, First Class
Coxswains
Boatswain's Mates
Gunner's Mates
Turret Captains
Minemen
Torpedoman's Mates

Quartermasters

Signalmen

Fire Controlmen

Fire Controlmen O—(Operators)

Yeomen

Storekeepers

Hospital Apprentice, First Class

Pharmacist's Mates

Ship's Cooks

Bakers

Chief Commissary Steward

ARTIFICER RATINGS

Radiomen
 Radio Technicians
 Radarmen
 Sonarmen
 Carpenter's Mates
 Shipfitters
 Metalsmiths
 Fireman, First Class
 Machinist's Mates
 Machinist's Mates S—(Shop Machinists)
 Motor Machinist's Mates
 Electrician's Mates
 Water Tenders
 Boilermakers

AVIATION RATINGS

Aviation Machinist's Mates
 Aviation Machinist's Mates C—(Aviation Carburetor Mechanics)
 Aviation Machinist's Mates F—(Aviation Flight Engineers)

Aviation Machinist's Mates H—(Aviation Hydraulic Mechanics)
 Aviation Machinist's Mates I—(Aviation Instrument Mechanics)
 Aviation Machinist's Mates P—(Aviation Propeller Mechanics)
 Aviation Electrician's Mates
 Aviation Radiomen
 Aviation Radio Technicians
 Aviation Metalsmiths
 Aviation Ordnancemen
 Aviation Fire Controlmen
 Aviation Ordnancemen T (Aviation Turret Mechanics)
 Parachute Riggers
 Photographer's Mates

RATING SCALE FOR USE IN DETERMINING ADVANCEMENT IN RADIO TECHNICIAN RATING

Radio Technician Rating Scale

The scope of research studies done on officer and enlisted personnel and training problems is shown in Chart III.

TEST DEVELOPMENT

Tests for Officer Personnel. When men and women apply at Offices of Naval Officer Procurement for commissioning as officers, they are given one of three forms of the Officer Qualification Test. The test scores are used with the records of education and experience and the results of physical examinations in determining admission of these persons to the Navy. Following admission, officers and officer candidates receive indoctrinal training in Indoctrination Schools, Reserve Midshipmen's Schools, or Naval Reserve Officer Training Corps Units. Here aptitude tests are given and test scores are used along with other factors to select individuals for such special technical training as Bomb Disposal School, Armed Guard School, Mine Warfare, the tactical use of radar, the theory and techniques of electronics gear, the amphibious and submarine programs. The Officer Classification Test, developed for routine use in selecting officer personnel for technical training and in classifying them for duty, measures aptitudes in the following areas: verbal, mechanical, mathematical, and spatial.

Achievement examinations have been constructed to measure the accomplishment of trainees in three officer training programs: the training of deck officers in Reserve Midshipmen's School, the training of officers in the tactical use of radar, and the technical training of electronics engineers. Achievement examinations are also being developed for Naval Reserve Officer Training Corps Units.

Tests for Enlisted Personnel. Nearly 250 tests have been constructed for enlisted personnel. As can be seen from Chart II these tests are used:

1. at the recruiting level for qualification of enlisted personnel
2. in the recruit training programs for selection of enlisted personnel for Naval Training Schools
3. at classification centers for determining assignment to duty
4. in recruit training programs for the measurement of achievement
5. in Naval Training Schools for the measurement of achievement
6. on ships and shore stations for determining eligibility for advancement in ratings

Tests for Qualification of Enlisted Personnel. At present, most enlisted men are processed by Selective Service, but seventeen-year olds, who apply at Navy recruiting offices, are tested for general aptitude for naval duty. Also at the recruiting level, certain men are earmarked, in part on the basis of test scores, for special training as Radio Technician, Combat Aircrewman, and Hospital Corpsman.

A special test, the Enlisted Qualification Test, has been developed for use with applicants for enlistment in the Women's Reserve.

Tests for Selection and Classification of Enlisted Personnel. The first, and most extensively used, tests developed for enlisted personnel are those which comprise the Basic Test Battery (see Chart II). The first forms were developed early in 1943. Three standard forms and a Fleet Edition are now available. The tests of the basic battery are used in the recruit training programs to select enlisted personnel for technical training programs. Based on extensive research, cutting scores on one or more of these tests have been established for 46 enlisted training programs.

In addition to the Basic Test Battery, other tests have been developed to select enlisted personnel for specialized technical training programs. Among these are the Radio Technician Selection Test for selecting men for Radio Technician training, the Sonar Pitch Memory Test for selecting operators of under-water electronics gear, and the Literacy and Non-Verbal Tests used for identification of poor readers.

In addition to being used in selection of enlisted personnel for technical training, the Basic Test Battery and the supplementary tests are used extensively in programs for classifying enlisted personnel for assignment to duty.

Achievement Examinations for Enlisted Personnel. Achievement examinations have been developed (see Chart II) for the recruit training programs, for 14 types of enlisted Naval Training Schools, such as Fire Controlmen, Gunner's Mates, Torpedomen, Quartermasters, and for a number of special training programs. These examinations include standardized performance and identification tests as well as written examinations. The results of the achievement examinations are used not only in assigning the final school marks of trainees, but also to indicate the relative standing of different schools of the same type and the effectiveness of programs of instruction.

Advancement in Rating Examinations. Three books of advancement in rating examination questions have been developed for use by the examining boards which determine in part the "rating" of an enlisted man in his specialty (e.g., Torpedoman, Machinist's Mate) and his advancement in pay grade within his rating. A pool of approximately 35,000 test items has been prepared for 47 Navy ratings, listed in Chart II. These sets of examinations will be revised as necessary.

RESEARCH ON PERSONNEL AND TRAINING

To date the research program has centered around problems of selection for training programs and of classification for duty assignments. As can be seen in Chart III, studies on selection for a variety of officer and enlisted training programs have explored the relationship between selection standards, such as test scores, age, educational level, civilian occupational experience, and success in the training programs. Comparable studies have been done on classification procedures.

Some studies have been done on training problems, notably on the measurement of achievement in officer and enlisted Naval Training Schools. Underway at present are a series of information surveys to study the effectiveness of training programs, and a comprehensive program of validating selection, classification, and training procedures by determining the relationship between the qualifications of naval personnel and their job proficiency.

AN INTEGRATED PROGRAM OF TEST DEVELOPMENT AND RESEARCH

All test construction and research on the selection and training of Radio Technicians are centered in the Radio Materiel Unit of the Section, thus facilitating the unified, comprehensive study of a training program which includes several levels of enlisted schools extending over an 11-month training program. The Radio Technician Selection Test has been developed for use in selecting men for this training, and achievement examinations have been developed for the first two schools: the Pre-Radio Materiel School, and the Elementary Electricity and Radio Materiel School. In addition to the preparation and validation of tests and examinations, research has been done to standardize the curricula, to measure the efficiency of teaching, and to effect other improvements in the training program. Corresponding to the Radio Technician Training Program for enlisted personnel is the program for training officers as electronics engineers. Tests have been developed to select officers for this training program and to measure the achievement in the first level of training, the Pre-Radar School. Test scores on this examination are also used to determine, in part, admission to the advanced Radar School. The tests developed and research done for this program are shown in Charts II and III, respectively.

SERVICES OF THE TEST AND RESEARCH SECTION

In addition to the development of standardized tests and the conduct of over-all research, the Test and Research Section provides a variety of services to Navy establishments. Summaries of scores made on officer and enlisted aptitude tests provide information regarding the quality of applicants for commissions and the quality of recruits, both for different times of the year and for different regions of the country. Reports on grading systems and on test scoring accuracy are made periodically to enlisted training programs. Assistance has been given to instructors in training programs in the interpretation and use of test scores and in the development of tests. To meet the need for help with test construction, a manual, *Constructing and Using Achievement Tests*, has been developed and widely distributed. In the process of developing tests, assistance has been given to schools in the clarification of curricular objectives and of standards of performance. The technical competence of the personnel of the Section is available, upon request, to any Navy program.

CHART III

RESEARCH STUDIES ON NAVAL PERSONNEL AND TRAINING PROGRAMS

RESEARCH ON SELECTION AND CLASSIFICATION

Validation on Selection and Classification

OFFICER TRAINING PROGRAMS

Amphibious Training

Validation of Officer Classification Test scores, Officer Personal Inventory scores, age, education and civilian occupational experience

Destroyer Training

Validation of Officer Classification Test scores, Officer Personal Inventory scores, age, education and civilian occupational experience

Motor Torpedo Training

Validation of Officer Classification Test scores, Officer Personal Inventory scores, age, education, civilian occupational experience, small boat experience

Submarine Training

Validation of Officer Classification Test scores, Officer Personal Inventory scores, age, education and civilian occupational experience

Radio Specialists Training (Electronics Engineers)

Validation of scores on Pre-Radar General Aptitude Test, General Mathematics Test, General Physics Test, and Officer Classification Test

Tactical Radar Training

Validation of scores on Relative Movement Test, Tactical Radar Test, CIC Aptitude Test, Officer Qualification Test, and of age and major field in college

Training For Technical Aviation Billets (Air Combat Intelligence, Air Navigation, Aviation Communication Training, Aviation Engineering)

Validation of Officer Classification Test scores, age, education, civilian occupational experience, and preference for duty

ENLISTED TRAINING PROGRAMS

IN NAVAL TRAINING SCHOOLS

Aviation Branch Schools (selected):

Aviation Machinist's Mates, Aviation Ordnancemen, Aviation Radiomen
Validation of Basic Test Battery scores, age and education

Bomb Disposal School

Validation of Basic Test Battery scores and Enlisted Personal Inventory scores

Electrical School

Validation of Basic Test Battery scores, age and education

Quartermaster School

Validation of Basic Test Battery scores, age and education

Radar Operators School

Validation of Basic Test Battery scores, age and education

Radio School

Validation of scores on Basic Test Battery, and Radio Code Tests, and of age and education

Signal School

Validation of Basic Test Battery scores, age and education

IN OTHER TRAINING PROGRAMS

Radarman Strikers for Destroyers and Fast Attack Transports

Validation of Basic Test Battery scores and CIC Aptitude Test scores

Radio Technician Training Program

Validation of Basic Test Battery scores and Radio Technician Selection Test scores

Validation of Tests for Selection for Training

OFFICERS

Officer Classification Test for selection for Naval Training Schools

Communications, Diesel Engineering, Harbor Defense, Pre-Radar

Other Training Programs

Naval Reserve Midshipmen's School, Motor Torpedo Boat Repair Unit, Officers' Torpedo School, Ordnance and Gunnery Schools

ENLISTED PERSONNEL

Basic Test Battery for selection for Naval Training Schools

Aviation Machinist's Mates, Aviation Ordnancemen, Aviation Radiomen, Basic Engineering, Bomb Disposal, Cooks and Bakers, Diesel, Electrical, Fire Controlmen, Fire Control-Advanced, Gunner's Mates, Gunner's Mates' Electric Hydraulic, Hospital Corps, Machinist's Mates, Quarter-masters, Radar Operators, Radio, Signal, Storekeepers, Torpedomen, Yeomen

Validation of Classification Requirements

OFFICERS

Amphibious and Destroyer Billets

Validation of Officer Classification Test scores, age, education and civilian occupational experience

ENLISTED PERSONNEL

Submarine Billets

Validation of scores on Basic Test Battery' Enlisted Personal Inventory, Otis Self-Administering Test of Mental Ability, and of age and rank in Naval Training School Class

Other Studies on Procedures for Selection and Classification

OFFICERS

Prediction of success in a Naval Reserve Midshipmen's School

Comparison of Officer Classification Test scores of men in different Indoctrination and Naval Reserve Midshipmen's Schools

Selection of officers for post graduate course in Torpedo Data Computer Operation in Submarine School

Evaluation of *Report of Fitness of Officers* for use as a criterion of success

ENLISTED PERSONNEL

Methods of assigning school quotas

Relation between recommended and actual recruit assignments to Naval Training Schools

Reliability of interviewers' judgment in recommending school assignments

Use of additive scores for selection for training

Evaluation of Basic Test Battery for selection, against grades made on achievement examinations for Naval Training Schools (Diesel) and (Electrical)

Comparison of men selected at Recruiting Stations with men selected at Naval Training Centers for the Radio Technician Training Programs

Analysis of Ortho-Rater scores of experienced gunners

RESEARCH ON PROBLEMS OF TRAINING

MEASUREMENT OF ACHIEVEMENT

Analyses of differences and variability in Naval Training School grades

Use of ratings in measurement of achievement

Analysis of marks in a Naval Reserve Midshipmen's School

Comparative evaluations of Naval Training Schools: for officers (Pre-Radar) and for enlisted personnel (Elementary Electricity and Radio Materiel)

Achievement in Naval Training Schools (Tactical Radar)

Comparison of scores on Electrical Final Achievement Examination by groups entering and groups ready to graduate from Naval Training Schools (Electrical)

STUDIES ON CURRICULA

Analysis of mathematical concepts in Naval Training School (Radio Materiel)

Comparison between graduates of long and short courses at Naval Training School (Tactical Radar)

STUDIES ON ATTRITION

Attrition in the Radio Technician Training Program

Causes of failure in Naval Training School (Radio)

OTHER STUDIES ON TRAINING

Questionnaire survey of what the enlisted man thinks about Navy training

Prediction of teacher competence in the Radio Technician Training Program

SUMMARY STATISTICS

OFFICERS

Officer Qualification Test

Population differences by Naval Districts

Differences in scores for men and women

Trends in test scores

Officer Classification Test

Scores for various Indoctrination and Naval Reserve Midshipmen's Schools

ENLISTED PERSONNEL

Basic Test Battery

Scores made by recruits at Naval Training Centers

Trends in test scores

Test score patterns of recruits recommended for school assignment

Test score patterns of school graduates

Radio Technician Selection Test

Trends in test scores

Highest school grade completed by enlisted men—white and negro

Studies on test scoring accuracy

SUMMARY

Since November 1942, fourteen tests have been developed or approved for various officer programs. More than 250 tests have been constructed for use with enlisted personnel. Research studies have been carried out for 19 officer and 27 enlisted activities. The emphasis in all projects has been upon test construction and research which will facilitate the admission of well-qualified persons to the Navy, the effective placement and utilization of personnel, and the development of more adequate training programs.

Forthcoming reports will describe the construction and use of some of the tests produced by the Test and Research Section and some of the major research activities. Among these reports will be:

- a. Development of the Basic Test Battery for Enlisted Personnel
- b. Construction and Use of Achievement Examinations for Navy Schools
- c. Research in the Radio Technician Training Program
- d. Research on Officer Qualification, Selection, Classification, and Training

PERSONNEL RESEARCH SECTION, THE ADJUTANT GENERAL'S OFFICE: DEVELOPMENT & CURRENT STATUS

STAFF, PERSONNEL RESEARCH SECTION, CLASSIFICATION AND REPLACEMENT BRANCH, THE ADJUTANT GENERAL'S OFFICE

INTRODUCTION

In February 1943, an article published in this journal surveyed the background, organization, and field of responsibility of the Personnel Research Section, Classification and Replacement Branch, The Adjutant General's Office, War Department (1). Since that time, major developments in the responsibilities of the section and consequent major changes in its organization have occurred.

The mission with which the Personnel Research Section is charged has not changed. In November 1943, the functions of the Adjutant General in respect to personnel research were stated in War Department Circular No. 312, which says in part:

"2. The establishment and control of Army-wide policies and procedures governing the classification, testing, selection, assignment, and reassignment of commissioned, warrant, enlisted, and Women's Army Corps personnel are functions of the War Department.

"3. The Adjutant General is designated the War Department operating agency for these functions and is charged with—

a. Preparation of regulations, memorandums, and releases on personnel classification, testing, selection, assignment, and reassignment procedures within established policies.

b. Development, construction, validation, and standardization of all personnel screening tests and interview techniques for the Army. . . ."

To the Personnel Research Section, as the operating agency of The Adjutant General, has been delegated the specific responsibility for the "development, construction, validation, and standardization of all personnel screening tests and interview techniques for the Army." The only exception to this statement of responsibilities is that the development of techniques to select the Flight Crews of the Army Air Forces is a function of the Air Surgeon.

During the period reported upon previously, the section was concentrating its efforts primarily on problems of initial classification and of selection for specialist training. Circumstances permitted the staff to work as a group on these tasks, specializing according to the type of work done—test construction, editing, statistics—rather than according to the type of problem. Essentially the office was organized into a Test Development and Analysis Subsection (including Test Development and Statistical Analysis Units) and a Test Service Subsection. Field work was conducted both by members of these subsections and by a special Field Studies Subsection (1).

With an increase in the variety of problems and an expansion of work, organizational changes became necessary for efficient operation. It was no longer possible for the staff to work as a group on any one problem—too many different problems had to be carried forward simultaneously. Moreover, since the new problems were increasingly specialized, it became necessary for personnel to be thoroughly familiar with one particular field of military personnel work.

NEW PROBLEMS ARISING IN 1943

The work grew, first of all, because of the continual efforts of the section to improve its techniques. In the reception-center program, the Army General Classification Test, while of proved value, was not regarded as a completely satisfactory test, since it yielded only one over-all score when in many cases selection depended on such distinct abilities as facility in arithmetic computation or comprehension of written instructions. Plans were made and work begun on a test or battery of tests designed to yield not only a general estimate of a soldier's ability but also as many as eight separate scores. At the present time, the Army General Classification Test 3a has been authorized for Army-wide use. This test yields a score for each of the four skills—reading, arithmetic computation, arithmetic reasoning, and pattern analysis—involved as well as an over-all score for general ability equivalent to the one obtained from Army General Classification Test 1a, 1b, 1c, or 1d. Work is going forward on three alternate forms, 3b, 3c, and 3d, as well as on supplementary tests of information about shop, automotive, radio, and electrical mechanics.

Another major change in the reception-center testing program has already been made. The Radiotelegraph Operator Aptitude Test, ROA-1, X-1 (2), was replaced in August 1944 by the Army Radio Code Aptitude Test, ARC-1, which has been shown to be a better predictor of success in learning code than ROA-1, X-1. The new test, ARC-1, is the Speed of Response Test developed in collaboration with the National Defense Research Committee. ROA and ARC differ in kind: the former is a discrimination test, requiring the subject to identify two sound patterns as the same or different; the latter is a learning test, in which the subject learns three letters in International Morse Code and is then tested on his knowledge of them.

Besides refining the means of initial classification, the Personnel Research Section expanded its work on the selection of men for specialist schools at Replacement Training Centers and similar installations, particularly at the Basic Training Centers of the Army Air Forces. A study of the validity of practical performance tests as predictors of success in the Air Forces Technical Schools resulted in the installation of a battery of paper-and-pencil as well as performance tests to select students. This battery replaced some 25 locally constructed performance tests, largely unvalidated and unstandardized. Other typical problems investigated were the selection of aircraft warning specialists, the grading system in Army Air Forces specialist schools, and the selection of men who could skip one part of their training as automotive mechanics at Ordnance schools. In the spring of 1945 the office turned its attention to a new problem in specialist training. With considerable numbers of men returning from overseas for reassignment, it has become necessary to find out exactly how well they know their military specialties so that those ready for reassignment can be assigned immediately while others can be given refresher training and still others completely retrained.

Projects which represented new phases of work were also begun. In July 1942 the first induction station program to eliminate men unlikely to learn the duties of a soldier was installed. A set of screening tests was put into operation while work was started immediately on a large-scale study of the value of some thirty tests designed for use with men of limited education and/or ability. This study included development of adequate criteria of soldier performance, trial of some thirty tests, selection of the best tests, standardization and validation of the ones selected, checks on these tests in operation, and construction of alternate forms. This project has also led to other research concerned with the problems of individual testing and of testing low-grade men (3).

The establishment of the Army Specialized Training Program in December 1942 brought a request to The Adjutant General to construct selection tests and national achievement tests in college subjects. The one hundred fifty-odd tests constructed represent what is probably the largest single objective-testing program in the college field.

Nor were these the only trends and new projects which the section faced early in 1943. The problem of separating soldiers from the Army was early recognized as a point at which classification could and should function. Separation counseling provides an opportunity to help the soldier assess what he has learned in the Army and to give him educational and vocational guidance. Procedures, including tests and information on the relation of Army tests to civilian jobs, were needed. In 1944 enough soldiers were being discharged from the Army to warrant the initiation of separation classification procedures. Work is in progress on projects related to tests for this program: at the present time, the relation between the Army tests most widely used (such as the AGCT) and several commercial tests used in industrial situations is being studied to provide information about the probable meaning of Army tests in relation to civilian jobs; work also goes forward on a battery of tests especially designed for use in separation counseling.

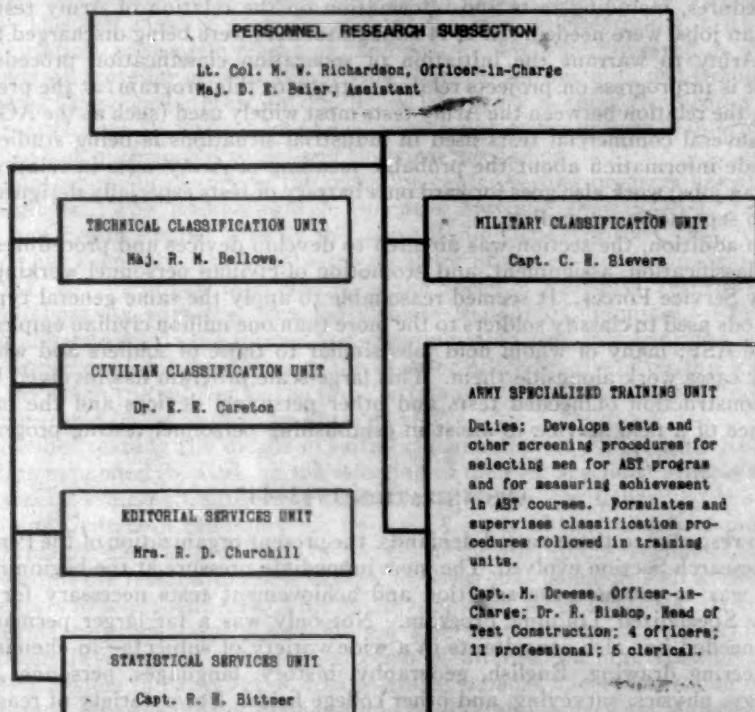
In addition, the section was directed to develop devices and procedures for the classification, assignment, and promotion of civilian personnel working for Army Service Forces. It seemed reasonable to apply the same general type of methods used to classify soldiers to the more than one million civilian employees of the ASF, many of whom hold jobs similar to those of soldiers and who in many cases work alongside them. This large-scale program has involved both the construction of needed tests and other personnel devices and the maintenance of a field service to assist in establishing personnel testing programs.

ORGANIZATION 1943-44*

In response to these varied demands, the present organization of the Personnel Research Section evolved. The most immediate pressure at the beginning of 1943 was to produce the selection and achievement tests necessary for the Army Specialized Training Program. Not only was a far larger permanent staff needed but also consultants in a wide variety of subjects—in chemistry, engineering drawing, English, geography, history, languages, personnel psychology, physics, surveying, and other college fields. For a variety of reasons, including the need to obtain personnel, the section moved to New York City on June 1, 1943. Overcrowded conditions in Washington had made it almost impossible to recruit full-time personnel, and the supply of qualified consultants in college fields was far greater in New York than in Washington because of the larger number of colleges and universities in the metropolitan area.

* Besides persons mentioned in this article, the following military and professional personnel were members of the Personnel Research Section in the period 1942-44 but are not at present working for the section: Capt. Russell Leiter; Lts. Charles L. Christier-nin, David L. Golan, Winslow N. Hallett, Lloyd Lofquist, and Philip Nogge; Drs. Kenneth E. Clark, Herman A. Copeland, Walter N. Durost, Solomon D. Evans, Wells Harrington, Donald M. Johnson, Philip M. Kitay, William C. Kvaraceus, Adam Poruban, Jr., James T. Russell, Otis C. Trimble, Edgar P. Virene, and J. L. Wallen; Miss Jane M. Allison, Mr. Vernon E. Clark, Mr. Earle A. Cleveland, Mrs. Helen C. Dondy, Mrs. Hilda F. Dunlap, Miss Marion B. Eller, Mrs. Margaret Norgaard, Mr. Watson O. Pierce, and Mrs. Barbara M. Quiat.

In December 1943, approximately 150,000 students were tested with the AST achievement tests, and test construction for this program was at its height. Figure 1 shows the organization of the office at that time. Since it seemed wise to designate the whole New York installation as a section and since other functions of the Branch were also transferred to New York, what had been called the Personnel Research Section was now called the Personnel Research Subsection. It was organized into four units, divided according to the field of testing for which each was responsible: Military Classification Unit, general tests for Army-wide use; Technical Classification Unit, tests for the selection of special



December 1943

FIGURE 1. ORGANIZATION OF PERSONNEL RESEARCH SUBSECTION.

ists; Army Specialized Training Unit, tests for the ASTP; and Civilian Classification Unit, tests for War Department civilian employees. In addition, there were two service units—Editorial and Statistical.

The Army Specialized Training Unit, the organization of which is given in detail in Figure 1, had two functions: supervision of classification procedures at AST training units and development of tests for selection for the ASTP and for measuring achievement in AST courses. Capt. Mitchell Dreese, Officer-in-Charge of the Unit, headed the field program. The other members of the field staff were Capt. James V. Shea and Lts. Albert H. Berg, John F. Scott, and Ralph J. Strom. Dr. Ruth Bishop was head of test construction staff, which

PERSONNEL RESEARCH: DEVELOPMENT & CURRENT STATUS 449

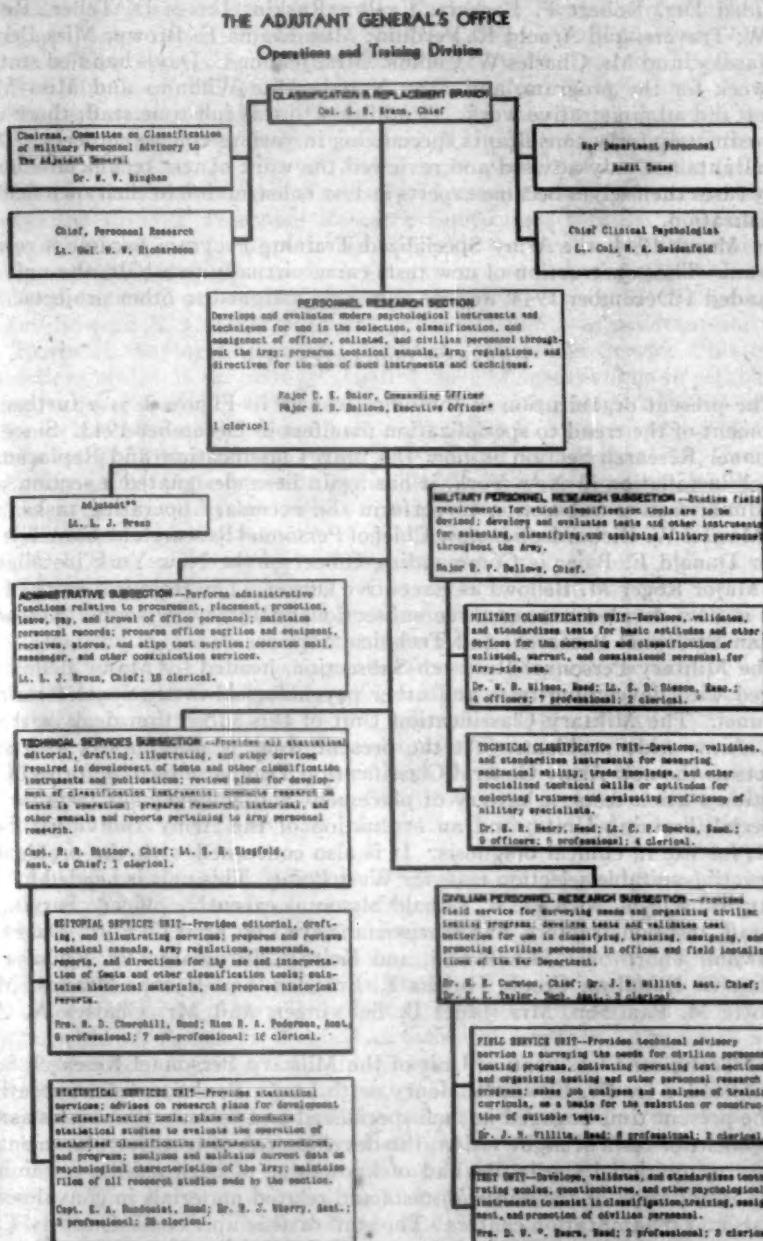


FIGURE 2. ORGANIZATION OF CLASSIFICATION AND REPLACEMENT BRANCH.

included Drs. Robert F. Earhart, Evelyn Raskin, James D. Teller, Robert M. W. Travers, and Arnold R. Verduin; Miss Emma E. Brown, Miss Bernice Orshansky, and Mr. Charles W. Collins. Mrs. Jeanne C. Davis handled statistical work for the program, and Mrs. Nannie Mae Williams and Miss Mary Jarrett did administrative work. In addition to this full-time staff, there were approximately forty consultants specializing in various college subjects. These consultants not only advised and reviewed the work of test technicians but in many cases themselves became experts in test construction in their own fields of specialization.

In March 1944, the Army Specialized Training Program became a reserve program. The construction of new tests came virtually to a halt; the unit was disbanded 1 December 1944, and its personnel assigned to other projects.

PRESENT ORGANIZATION

The present organization of the office, shown in Figure 2, is a further development of the trend to specialization manifest in December 1943. Since the Personnel Research Section is now the only Classification and Replacement Branch installation in New York, it has again been designated a section with an Administrative Subsection to perform the necessary operating tasks. Lt. Col. Marion W. Richardson is now Chief of Personnel Research at branch level. Major Donald E. Baier is Commanding Officer of the New York installation with Major Roger M. Bellows as Executive Officer. The technical work of the office is now divided among three subsections: Military Personnel Research, Civilian Personnel Research, and Technical Services.

The Military Personnel Research Subsection, headed by Major Bellows, is charged with developing tests and other psychological instruments for Army personnel. The Military Classification Unit of this subsection deals with the basic, Army-wide problems. At the present time, it is occupied with such projects as the new Army General Classification Test 3a; alternate forms of the induction station tests; a battery of placement and achievement tests for use in Special Training Units; and an evaluation of the Army Individual Test, AIT-1, for use in clinical diagnosis. It is also concerned with the problem of constructing suitable selection tests for West Point. This unit is headed by Dr. William R. Wilson, with Lt. E. Donald Sisson as executive officer. Serving as field staff, test constructors, and statisticians are Lts. Fred C. Ford, David R. Krathwohl, Thornton C. Karlowski, and Keith L. Broman; Drs. Richard H. Paynter, G. Hamilton Crook, Hubert E. Brogden, and Hyman Brandt; Miss Charlotte M. Panimon, Mrs. Janet B. Schwinger, and Mr. Charles W. Collins.*

The Technical Classification Unit of the Military Personnel Research Subsection, headed by Dr. Edwin R. Henry, with Lt. C. Paul Sparks as executive, is at the present time engaged in such specialized and technical problems as the development of tests of night vision, the development of tests for placement in military occupational specialties and of knowledge of basic military training, and the installation of classification tests and related materials in convalescent hospitals and rehabilitation centers. The staff of this unit consists of Lts. Carl

* The list is confined to full-time professional and military personnel of all units. Thanks are due to many part-time technical experts and consultants. Clerical and sub-professional personnel, performing highly technical services, have contributed vitally to these operations.

L. Anderson, Albert H. Berg, Horace H. Corbin, Norman I. Greenfield, James M. Lynch, John F. Scott, Joseph L. Speicher, Calvin W. Taylor, and Louis P. Willemin; Drs. Robert F. Earhart and Robert M. W. Travers; Mr. Frank P. Cassens, Mr. Gordon L. Macdonald, and Mr. Belford B. Nelson.

The responsibilities of the Civilian Personnel Research Subsection in relation to civilian personnel differ from those of the Military Personnel Research Section in regard to the Army. There is no over-all plan for the testing of civilian personnel as there is for military. Instead these problems are handled locally; the Civilian Personnel Research Subsection, through the Industrial Personnel Division of Headquarters, ASF, aids the local installations in establishing and maintaining personnel testing units and provides standardized and validated tests and procedures needed in the field. This subsection is headed by Dr. Edward E. Cureton with Dr. John M. Willits as assistant chief and Dr. Erwin K. Taylor as technical assistant. The Field Service Unit of this subsection, which is at present assisting several installations in establishing programs for classifying civilian personnel, is headed by Dr. Willits and includes on its staff Drs. Raymond A. Katzell, Grace E. Manson, Philip M. Stone, and James D. Teller; Mr. Prentice Reeves, and Mr. Manual M. Cynamon. The other unit of the subsection is the Test Unit; Mrs. Dorothea W. F. Ewers is head with Miss Edith Cummins and Mrs. Celia M. Klinger as staff. This unit is developing such tests as a mechanical battery, a clerical battery, and a non-verbal test as a low-level intelligence test for such jobs as ammunition handlers and warehouse laborers. This subsection also handles one problem concerned with military personnel: the construction of tests for use in separation classification, the point at which Army and civilian classification meet. At the time when the soldier is separated from the Army, the separation counselor can help him by interpreting the knowledge the Army has of his aptitudes and abilities in the light of the civilian opportunities ahead of him. Since Army tests and procedures have been evaluated solely in military terms heretofore, it is necessary both to construct new tests as the Civilian Personnel Research Subsection is doing and to reinterpret Army tests in relation to widely used commercial tests and to civilian jobs as the Technical Services Subsection is doing.

The largest subsection is Technical Services, which provides a wide variety of statistical and editorial services to all other elements of the section. These include editing of tests and reports, preparing copy for the printer, providing computational and statistical facilities (including an IBM installation), and advising in the planning of statistical studies. In addition, this subsection has a number of projects of its own. Captain Reign H. Bittner is chief of this subsection with Lt. Ernest H. Ziegfeld as technical assistant. The units are Statistical Services, of which Captain Edward A. Rundquist is head, with Dr. Robert J. Wherry as assistant and with a staff including Drs. Read D. Tuddenham, Naomi S. Stewart, and Mr. Robert E. Breden; and Editorial Services, having Mrs. Ruth D. Churchill as head with Miss Ruth A. Pedersen as assistant and a staff made up of Dr. Evelyn Raskin; Miss Emma E. Brown, Mrs. Jane L. Eastman, Miss Betty B. Himmelman, Mrs. Charlotte G. Honig, Miss Marilyn R. Mendley, Miss Bernice Orshansky, and Mrs. Lillian E. Troll. In addition to the various statistical duties, the Statistical Services Unit carries on such projects as monthly analyses of the Army General Classification Test distributions of men processed at Reception Centers, follow-up validity studies of Army tests and other classification procedures, a study of the relationship between civilian occupations and AGCT scores, and operational statistics on the Army

Specialized Training Program. Typical projects of the Editorial Services Unit are the preparation of a manual of statistical data on Army tests, giving means, standard deviations, reliability coefficients, and correlations with a wide variety of variables for these tests as given to various Army groups; the revision of TM 12-260, *Personnel Classification Tests*, a technical manual instructing Army personnel in the theory and use of Army tests; and the preparation of a history of the problems and the work of the Personnel Research Section.

CONCLUSION

This article has summarized the evolution of the Personnel Research Section during the past two years. The major new task of the section at the present time is to devise scientific personnel procedures for selecting officers to be retained in the peacetime Army. Although this project, undertaken by direction of the General Staff, is so large that it cuts across all organizational lines, it has not made any permanent changes in the structure and function of the section. While the future cannot be predicted, at every stage of war, personnel problems demanding research for adequate solution have arisen; this trend may be expected to continue in the peacetime Army.

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APPLICATIONS OF PSYCHOLOGY IN THE AMERICAN ARMY

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Psychology will be discussed herein under the topics of personnel classification and selection, training, leadership, conditions and methods of work, and morale. In varying degrees each of these topics has been studied and applied in the American Army. A number of articles have been published in the psychological journals pointing out contributions to the war effort. Unlike the critical attitude that is usually present both in psychological articles and reviews, the literature of military psychology is surprisingly sweet in its absence of criticism. There has been a shortage of internal criticism within professional writing to point out the limitations of studies reported and their possibilities under different situations. This sweetness within the journals is at considerable variance with verbal comments of both psychologists and army officers.

The explanation of this optimism within our journals may be merely another symptom of a national failing. Our press likes to tell us that our guns are better than the enemy even when they are not, that our soldiers are smarter than the enemy when that is doubtful; that our soldiers are more courageous than the enemy whose lack of surrender is due to an enigmatic fanaticism. Why then are we winning? The main reason seems to be that our side has tremendously more guns, planes, ships, tanks, and soldiers.

It is the thesis of this paper that because of shortcomings in organization and in personnel the contributions of Army psychology have not been nearly so great as is possible. Some of these shortcomings are internal to psychology as a profession; others are failures to educate and indoctrinate army officials into the implications of psychology for Army administration. Since one of the purposes of a war is to prepare for the next one, an attempt will be made to point the way to obtaining more accurate knowledge of soldier's behavior and to perfecting military methods of dealing with soldiers.

There has been no organization for bringing about a comprehensive American Army psychology. Two national committees have broad responsibilities with respect to American Army psychology. The National Research Council Committee on the Classification of Military Personnel Advisory to The Adjutant General is limited in function practically as shown by its title. It is concerned almost entirely with classification and only with classification as pertains to The Adjutant General which does not include the important specialists comprising air crews. On a few occasions this committee has advised on problems of training and leadership. The National Defense Research Committee has worked with and for the army on a number of research projects. The work of this committee has largely been confidential or secret. It is known that its charter is not one including research on all important phases of Army psychology. In addition to the functions of these two committees there are important Army psychological problems that have had no professional leadership on a national scale.

The area where psychology has done the most in the American Army is in personnel classification and selection. Before discussing the classification of

* On leave 1940—; Major, Air Corps, Director, Manning Section, A-1 Division, Hq. 15th Air Force.

persons it is appropriate to discuss the classification of jobs into which and for which individuals are classified.

Shartle and his associates began before the passage of the Selective Service law a job analysis of each enlisted man's job. One purpose of the military authorities who initiated the study was to determine a fair schedule for grades and pay. Job descriptions based on careful job analyses are obviously also valuable as a guide to training as well as providing the framework for the classification of soldiers.

The analysis of enlisted men's jobs was made under peace time conditions whereas during war many of these jobs changed. The job analysts and their supervisors were experienced in civilian industry but knew little of the Army. Failure to follow the familiar terminology and the actual Army organization of jobs resulted. The job analysis for enlisted men did lead, however, to much improvement in job descriptions which were published as Army Regulations. (Officer jobs were not analyzed as early as were those for enlisted men. The Adjustant General's Office later published a set of equally detailed job descriptions for officers based on some job analysis.)

Specification Serial Numbers for Military Occupational Specialties are very widely used but are often a headache to Army officers because of the lack of a clear and uniform policy as to what is a job and because of so many unnecessary changes in the job classification. New jobs necessarily arise and jobs merge because of changes in methods or conditions. Many changes, however, were made because of lack of a definite policy. It is the current fashion to have fewer job classifications than formerly because of pressure to simplify the system. This is perhaps a good thing but has the obvious disadvantage of preventing certain refinements. Officer jobs have a meaningful numerical code structure wherein each digit from left to right has a more specific connotation. Such a system, similar to that used in the Dictionary of Occupational Titles, can be used flexibly and simply even where an extremely large number of jobs are shown. That is to say, one can deal only in three digit codes if four digits are too complex for the purpose, or one can deal even in two digits. The numerical code structure for enlisted men is almost meaningless. There was a lack of foresighted planning.

Classification of soldiers goes on in Selective Service, induction stations, reception centers, replacement training centers, training units, replacement units, and in combat units.

Selective Service has done nothing to select the particular men at a particular time the Army needed in terms of vocational skills or vocational aptitudes. For example, in the explosive growth of the Army Air Forces shortly after Selective Service began operating, a high percent of men entered the AAF as compared to the number entering the Infantry. Many young physically capable men with no skill for clerical work or for semi-skilled mechanics or as technicians were put in the AAF. Later when the AAF began to reach its troop basis, which occurred earlier than the saturation of the Infantry according to plan, the Infantry had to absorb many older and less physically qualified men whom it could not efficiently use. It needed many of the young men in the AAF but could not get them because then they had had a year or more of training and experience. To take them would have been to disrupt the AAF. Similarly in the case of officers young physically strong men with no talents peculiar to the needs of the AAF were put on desk jobs. Later the Infantry needed them just as it needed the young physically qualified enlisted men. In

stead the Infantry got many older men and men with less physical endurance who would have served the AAF equally as well as the younger men.

In induction stations attempts were made to exclude illiterates and feeble-minded. The standards have fluctuated considerably. These fluctuations could be laid to shifting supply and demand although there is again a question as to the foresight in the personnel plan.

At reception centers men are classified according to their civilian experience which is useful to the Army. They are given classification and aptitude tests to determine their capacity for mastering Army specialist courses of training. The important decision as to which arm or service will train the man is made in the reception center. A later change in arm or service is infrequent and is almost completely barred insofar as the interest expressed by the enlisted man is concerned. Determination of arm or service is supposed to be made according to the qualifications of the soldier and the needs of the Army. In many cases a quota system stresses the needs of the Army and overlooks the qualifications of the man. Thousands of cases are present where men in the AAF would be more useful to the Infantry and an equal number of cases in the Infantry would be of more use to the AAF. More branch malassignments have been corrected toward the AAF than towards any other branch because of men's preferences. Since approximately 80% of all men in the Army prefer the AAF because of its more comfortable living conditions, higher pay, and glamor, there have been many requests initiated by the individual to transfer to the AAF. In hundreds of cases where the request was supported by a skill useful to the AAF the transfer has been made. Very rare are requests to transfer to the Infantry as a rifleman or combat Lieutenant.

The Army Ground Force has not obtained its fair share of intelligence. It did not get the number of men with high GCT (Army General Classification Test) scores to yield enough smart non-commissioned officers. It did not receive enough bright men with leadership to receive the available battlefield commissions. It did not get these bright men because the AAF got them first. Even between wars, the AAF used an intelligence test to select its men. The results showed that airplane mechanics and other aviation technicians learned faster who had high Army Alpha test scores. Similar results would have been obtained in the Infantry or in any other branch had the test been given and compared with training records. (No results are available comparing GCT scores for Infantry and AAF officers). The AAF, even after filling all of its technical jobs, has an embarrassing abundance of men superior in GCT who are doing routine duties as drivers, laborers, airplane handlers, etc. In a large sample 10% of AAF men in the lowest skilled job, laborer, scored in grades I and II GCT. At the same time the Infantry needed such men to become non-commissioned officers.

In Replacement Training Centers or Basic Training Centers, as they are called in the AAF, the classification of personnel continues. There the decision is made as to the specific type of training or duty to which the soldier will be assigned. As in Reception Centers the quota system continues to exert its evil influence. Regardless of a soldier's qualifications to become a clerk, if this week's quota calls for a mechanic he will be trained as a mechanic. Next week's quota for clerks may go unfilled. The soldier may have no interest in mechanical work and little aptitude for it. To match abilities and quotas in an efficient way would have required considerable planning and organization. No program was attempted along this line to exploit the total Army-wide possibilities.

A number of psychological tests are administered in Reception, Replacement and Basic Training Centers. Up to June 1942, there had been constructed for use four alternate forms of the Army General Classification Test, three alternate forms of the Army General Mechanical Aptitude Test and two alternate forms of the Clerical Aptitude Test. The United States Employment Service permitted the use of its large number of oral trade tests which had been validated in civilian industry. Some study had been made of the validity of the Signal Corps Code Aptitude Test later adopted for use as the Radio Operator Aptitude Test. Except for a new radio code test there was no major revision of psychological tests, at least up to the summer of 1944, although consideration had been given to the use of a basic classification test battery as a possible substitute for the GCT, MA and CA. The tests used have a satisfactory reliability with the possible exception of the Radio Operator Aptitude Test which was replaced. The validity of the GCT is perhaps as high as can be expected from a 40 minute test of its type. The validity of MA is little greater than GCT in predicting success in mechanical training. There is too much overlap between the GCT and MA.

Personnel classification continues in training units in the United States by upgrading those who succeed and by reassigning those who fail. In general there has been too much upgrading of both officers and enlisted men and not enough downgrading. People are promoted not because they are the best available but because a position vacancy for a higher grade is immediately present. In spite of bales of paper giving instructions and forms, the spirit of promotion for merit has not thoroughly permeated Army procedure.

Classification in units for sending men overseas produced some difficulty. It has always been written policy to send the best men overseas. Training units, especially in the early months of the war, committed classification crimes in sending unqualified personnel overseas. This selfishness, though understandable and widely prevalent in the Army, is sometimes inefficient. The malevolent quota system again contributed to this source of classification error. If 10 radar mechanics were requested, but 10 were not available the unit replied to that effect. It was instructed to yield them even though they were not available. It then performed a shotgun reclassification rather than do the more sanitary act of sending clearly indicated next best substitute classifications but leaving the classifications honest.

Classification continues in overseas Replacement Depots in the United States where men are processed for movement as replacements to overseas units. Aside from a few early abuses, little of note in classification is performed in these depots save correcting occasional errors and bringing records up to date.

From depots in the United States personnel are shipped to replacement units overseas where again some classification changes are made. No changes should be necessary except to correct errors. There have been instances, however, where men without proper training have been reclassified to meet quota requirements. By analogy if someone ordered a can of peaches, a grocer who substituted pears and put a peach label on the can would not be popular. An Army officer who authorizes a grossly inaccurate reclassification is equally dishonest as the grocer. One explanation as to why such personnel finagling is so much more prevalent than mislabeling peaches or other supplies is the less exact nature of personnel functions as compared to supply and matériel. This inexactness leads slick operators into temptation. In turn these devious devices contribute to keeping personnel procedures in the twilight of accuracy.

In combat units one of the classification problems that first assumed importance is that soldiers become unfit for full combat duty as a result of wounds or other disability. In many instances the soldier can perform a service job in a rear echelon, such as working as a clerk or driving a truck. Soldiers who can perform only in jobs not requiring the stamina and strength called for in combat are classified as "limited service" or "limited assignment." There have been some confusing shifts in policy with respect to limited assignment men. In one theater, for example, many limited assignment men were being tried on the job and many were succeeding. Before their trial period was completed it was decided to send all of them, regardless of suitability for the job on which being tried, to the United States which is the fondest goal of every soldier overseas. In other instances failures on the job were returned to the United States whereas those who succeeded were kept overseas. Similarly a policy for the rotation of personnel was supposed to reward persons who had performed successfully over a long period of time by returning them to the United States for an assignment in the Zone of the Interior. As it turned out rotation is often used to return officers who are not quite incompetent enough to be reclassified as unsatisfactory. Enlisted men, similarly, are returned on rotation not according to the spirit of the policy, but to get rid of clunks. In sum, contrary to the written policy, soldiers are punished by banishment from the United States when they succeed and are rewarded by return when they fail. Such psychology in reverse will add business for mental hygienists.

As men arrive back into the United States additional classification problems arise. Considerable dead wood arrives. Returned men may be heroes or may be clunks. Whether hero or clunk, can not be distinguished because of the lack of forthrightness and understanding in the rating of their competence and skill. In the redistribution stations which receive the personnel from overseas and distribute them the policies appear to be sound and the personnel technicians conscientious. A number of errors in classification and assignment have been reported because of a lack of military knowledge of jobs and personnel qualifications therefor. On the other hand, Army jobs are so varied and complex that few persons could have any more than superficial knowledge concerning all jobs. The need has been recognized, but not thoroughly exploited, to place in redistribution stations not only personnel technicians, but also specialists in each important job family who are acquainted with the actual details of jobs.

Classification, which has utilized the services of far more psychologists than any other phase of Army work, is shown to have a number of shortcomings. The major shortcomings can be generalized as (1) quotas which force men into jobs for which other men at a slightly different time or place are better fitted; (2) lack of understanding on the part of psychologists as to details of military jobs and organization and lack of understanding on the part of Army officials to possibilities and limitations of vocational psychology.

Specialized training is given in many Army jobs where the tasks cannot be learned satisfactorily on the job or where sufficient persons are not available from civilian life possessing the desired skills. The organization of training is largely in terms of specific jobs, the classification of which is mentioned above. Considering the large number of apparently important psychological problems which are a part of Army training a surprisingly small number of psychologists have been at work in this area. Psychologists have written a manual on how to teach instructors to teach and have made some studies on training methods for radio operators, bombardiers, aerial gunners and a few other specialties. Many Army training authorities are well acquainted with laws of learning as they

have been described in textbooks. Should a comprehensive program of Army psychology be developed it is obvious that training is one of the important areas to be emphasized.

A few possible improvements in the Army training program are widely known. Curricula of instruction, in spite of frequent attempts to find out what is needed, are often not sufficiently practical. One reason is found in the lack of a continuing and comprehensive job analysis program which would define the important tasks of each job. The selection of instructors could be improved by emphasis on interest and aptitude for instructing in addition to mastery of subject matter which has sometimes been the sole basis for selection. Training courses could at times have been improved if the emphasis for completion of the course had been placed on raised standards instead of on filling a quota despite quality of work performed.

Leadership, its selection and training, is a paramount problem of Army psychology which cuts across several other topics discussed herein. In general, the Army has given lip service to the importance of leadership, but that greater emphasis would yield significantly improved results seems a reasonable expectation. Non-commissioned as well as commissioned officers would be included in a thorough program of selecting and training the best qualified leaders. Proof of the possibility of a significant problem needing solution is widespread attitudes of disrespect for officers shown by enlisted men.

There is general agreement concerning qualifications of Army leaders. (1) Their personality should command respect and cooperation. (2) They should be genuinely interested in the welfare of their subordinates. (3) They should possess courage. (4) They should possess drive to complete assigned tasks and to initiate necessary actions. (5) They should possess certain minima of intelligence and education. There are plenty of persons in the Army possessing the above qualifications but they are not officers in enough cases. One thing that has confused the issue is the matter of officer specialists who are not required to be leaders of men. Many people are in uniform as officers whose work could be done as well or better in civilian clothes, leaving the Army uniform to be respected more as the badge of a combat soldier. Perhaps psychologists are an example of professional and technical persons who should not wear the Army uniform. Perhaps a separate uniform for service personnel or for non-combatants, such as the Germans use, would be helpful. When officers fail as leaders they are usually reassigned to some administrative or specialist job. It seems to be assumed that a sufficient qualification as an administrative officer is failure in a combat job.

Selection as well as promotion of officers has been done too locally without sufficient regard for all eligibles. Take the case of a company which has an opportunity to recommend a candidate for Officer Candidate School. The company recommends their best man even when it is clear that he is not good enough. Thus the quota system works in favor of keeping down a rigorous merit system.

Training of leaders has received varying emphasis throughout the different Army branches. Infantry and Engineers have done an outstanding job of training in leadership traits. Limitation is mentioned above of the intelligence of the field from which Infantry officers are chosen. Services such as The Adjutant General's Department have failed almost no one in Officer Candidate School which is taken to mean that the selection was almost perfect. More likely it means that the standards for graduation were not sufficiently rigorous. Lack of officer characteristics in Air Corps pilots and in other flying officers is often

mentioned. There has been little attempt, presumably because of time limitations, to train Air Corps flying officers in traits of leadership.

Supervision of officers could be improved in such a way as to contribute to more effective leadership. Most important perhaps would be an accurate and forthright use of efficiency reports and performance ratings. These would serve their central purpose in evaluating officers for promotion and demotion. They would also be a valuable basis for supervising officers to improve their work methods. First it would be necessary for officers to learn the importance and the mechanics of efficiency reports and performance ratings. Time spent in making a study of each officer is not wasted but is an important part of the kind of supervision that is an officer's primary duty. Once the rating officer has had an opportunity to observe the officer sufficiently for a reliable rating the rating officer should discuss the strong and weak points with the one who is rated. Unfortunately all inaccuracies and leniencies are not due to a lack of skill but some are due to lack of honesty. Officers have been recommended for promotion with an excellent rating who were recommended for transfer as unsatisfactory by the same officer who rated them, and practically at the same time. Reasons given for leniency in rating are (1) living conditions in the Army where officers live together as a family and thereby become very friendly; (2) legalistic Army requirements of having to prove any unsatisfactory rating.

Another aspect of deficiency in American Army psychology of leadership is shown in the cartoons of Mauldin. Officers are pictured typically as preempting too many comforts, as being dead wood, as in general not being leaders whom enlisted men can respect.

Conditions and methods of work have been studied by a few psychologists. There has been no thorough and comprehensive program as to optimal conditions and most efficient methods of Army duties. No studies have been reported from the front line infantry, tanks, or planes. Nothing is known of psychological studies which could lead to greater efficiency in the Army's numerous machine shops and depots, nor of psychological studies which could streamline the Army's complicated administrative procedures. Two examples of possible improvements will be given. Directives are written in so many different media, are cross referenced in such a complicated way, and are distributed in such a spotty and often highly delayed manner as to mean that uniform compliance for a procedure is rarely obtained. Clear preparation and thorough distribution would save hundreds of man hours. A second example is somewhat related. Indorsements shuttle back and forth between various levels in some instances because of changes in regulations. This delays necessary action for weeks and sometimes even for months. There should be an understanding that an action begun under a regulation will be carried out even though the regulation is revised—unless the change is so important as to justify return of the papers. It would of course be necessary to specify in the revised directive conditions under which new actions would have to be initiated.

One improvement in Army administration is to have the optimum number of headquarters. This problem is largely one of business management but also touches on personnel administration and to a lesser extent on the psychology of work. There is a common belief in the Army that considerable lag in administration is caused by too many headquarters. Each additional headquarters, or layer, through which papers must be processed results in just so much additional delay unless the headquarters is actually essential for control. Morale in an unnecessary headquarters is often low because the members often do not have enough to do and realize that their duties are not essential.

Morale is a subject closely related to personnel classification, training, and to leadership discussed above. Army morale insofar as it is eagerness or at least willingness to fight depends on the soldier's believing that he is in the right job; on the soldier's believing that his training is adequate; on the soldier's believing that his leaders are competent. The program of informing the soldier as to the effectiveness of job placement, training, and leadership is a combined command and staff morale program. As is true of all propaganda it is weakened if those at whom it is aimed believe it to contain serious exaggerations.

Eagerness or even willingness to fight depends largely upon the soldier's believing that he is fighting for something worthwhile. Some of the large questions of psychological warfare, of political ideology and of economics run outside the field of psychology. Military honors and promotions which are stimuli to fighting are in part psychological matters. It is doubtful that they are handled in such a way as to produce the greatest respect for awards and for promotions.

In conclusion it is seen that much remains to be done in improving methods of psychology and in applying them in the American Army. Some organizational problems, such as the striving for a separate Air Force and the attendant profligate use of psychological talent, are too broad for psychologists to solve. The majority of problems presented require coordinated planning and action on the part of Army authorities and psychologists to bring about increased efficiency. Even in personnel classification and selection where the bulk of psychological talent has worked, improvement of methods and particularly a better use of them can be adjusted to personnel administration. In the important area of Army training, few psychologists have been employed directly. Psychological problems of leadership have received recognition in conversation but a thorough follow through has been lacking in large part. Conditions and methods of work have not been investigated in their psychological aspects. Morale has been studied by highly competent sociologists and social psychologists but front line supervisors have often not understood and not used their results.

It is recommended that the effectiveness of psychology in the American Army be improved by the following means to be worked out jointly between the Military Psychology Section of the American Association for Applied Psychology and the War Department.

(1) Introduce comprehensive courses in Military Psychology at West Point, at the Command and General Staff School, and at other important Army schools.

(2) Provide internships for graduate students of psychology to work on military research projects in military organizations. This would not only solve some problems but it would teach some psychologists Army organization, administration, and jargon.

(3) Create an advisory board of psychologists to spend considerable time advising the War Department on all phases of Army Psychology.

THE ADJUSTMENT OF ARMY ILLITERATES*

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In brief, a special training center takes the newly-inducted illiterate and brings him to an approximate fourth-grade level of literacy within a maximum of twelve weeks' time. If he fails to meet the graduation level within the set time limits, he is discharged as inapt. If graduated, he enters upon his basic training at some other Army installation.

Previous publications by Altus (1, 2) were concerned with the validity of the Army version of the Wechsler Mental Examination for all illiterates and for certain racial and linguistic sub-groups among them. A publication by Altus and Bell (3) gave proof of the validity of certain types of oral adjustment tests in a special training center. The adjustment tests used in this latter study were not official tests. They were experimental, the hope being that they might show some validity for the specialized type of personnel work incidental to a training installation for Army illiterates.

Fortunately, the hope for validity of the adjustment tests was realized, at least to the extent of a biserial correlation of $.453 \pm .028$ when the criterion was taken as the disposition of the trainee, i.e., whether discharged as inapt or shipped as a graduate. The N for this correlation was 507. Since these tests had demonstrable validity, it would have been desirable to continue them as part of the oral battery administered to every incoming trainee. By December, 1943, the press of work became such, however, that it was necessary to reduce the number of oral adjustment items.

A single test of 36 items was then devised. Twenty-four of the 87 questions in the original four tests of adjustment were retained, the basis of selection being the discrimination shown in successive item analyses. Six of these items were retained from each of the original four tests of adjustment, Army Adjustment, Concentrated Bell, Hypochondria and Paranoia (3). Six more items were obtained from an item analysis of the Depression scale of the *Minnesota Multiphasic Personality Inventory* (7), though these were shortened and changed, somewhat in wording. The final set of six came from a 25-point measure of hysteria developed locally by an Army psychiatrist, Capt. Sydney Kay, and the writer. The 36-point composite test of adjustment† has been in continuous

* The opinions herein expressed are the author's; they do not necessarily reflect official viewpoints.

† Lts Jerry Clark and Ephraim Yohannan, T/4 Roy Burge, Cpl Henry Diffenderfer, T/4 Robert Ewart, Pfc Sidney Feinberg, T/Sgt Clarence Mahler, T/5 Grant Smith and S/Sgt James Taylor have all contributed to this article by administering tests, in the regular course of their duties, tabulating and statistically manipulating data. Credit is especially due T/4 Edmund Ellis for his statistical labors.

‡ The origin of the 36 items is as follows: Sixteen were locally constructed; fourteen, though shortened and usually changed in wording, came from the *Minnesota Multiphasic Personality Inventory*; six were derived, with some changes, from Bell's *Student Adjustment Inventory*. Drs. Hathaway and McKinley and Capt Hugh Bell have consented to the publication of the twenty adjustment questions, belonging to their tests, in the form in which they appear in Table I.

use since 15 December 1943 in the Ninth Service Command Special Training Center. In that time it has been administered to thousands of trainees.

Like the tests which preceded and, in part, fathered it, the 36-point test is not an officially sanctioned Army test. Both the new test and the old ones were experimental and pragmatic in nature, arising from the quite evident need for some quantitative measure of the adjustment of Army illiterates. It does not require much clinical work among soldiers of such marginal literacy and intellect to make clear the considerable role played by adjustment factors in the efficiency of an individual soldier in his application to an assigned task.

To discriminate among varying shades of adjustment in a special training center, a given instrument must be rather sensitive since all of the trainees have been individually examined by a psychiatrist prior to their induction, thus, presumably, weeding out all those with psychoses or with crippling psychoneurotic and psychopathic trends. The testable range of adjustment among trainees is thus foreshortened to the so-called normal group. Good clinical judgment would appear to be a better basis for estimating adjustment than a routine set of test questions, but after interviewing several thousand trainees, the author still prefers to put his faith in the quantifiable and the communicable.

It must be admitted, however, that psychiatrists in contrast to psychologists generally prefer the clinical impression to any set of stereotyped questions. The induction station psychiatrists, Curtis and Thorne (6) say, for instance, "A number . . . of personality inventories have been constructed and rather widely used but unfortunately the results have not provided a reliable index of neuroticism or psychotic tendency." In the same article they say, in reference to clinical insight, "After several years of experience in a standard examining situation, the examiner becomes able to sense the presence of normality or psychopathy during the first thirty seconds of the interview and is even occasionally able to make a shrewd diagnostic guess on first glance." Unfortunately such insight, unlike Elijah's mantle, is not transferable. Consequently, a personnel consultant who makes no claims to such insight and who must delegate much of his work to personnel untrained in psychiatry and with inadequate training in psychology must have recourse to other techniques, such as, for instance, the development by statistical methods of an instrument which will partially replace clinical ability of the nature cited.

I. THE VALIDITY OF AN ADJUSTMENT TEST

Validity is determined by the criterion employed. In the present instance the criterion was the disposition of the trainee—that is, whether he would put forth his best efforts and graduate or whether he would show so little improvement, whatever the reason, that he would receive a discharge for inaptness. The extent to which adjustment, as operationally defined by the 36 questions, is associated with the dichotomous disposition of the trainee represents its validity as herein defined.

The range of effectiveness of the adjustment test was restricted for at least two reasons. One was the examination, previously mentioned, which operated to reject at the Induction Station those men who were obviously unfit for military service from the psychiatric standpoint. The population, therefore, consisted only of those who had been accepted as psychiatrically normal. The second factor which limited the effectiveness of the adjustment test was the varying degree of literacy among the "illiterate" trainees received. In a study of all trainees received for five weeks it was found that 31.2% of them could pass the two graduation tests the day of their arrival at the Training Center and therefore were already literate in the Army sense of the word. In this same

study there were 10.5% who, according to previous statistical studies, could not graduate within the restricted time limit imposed for their training. This latter group included (1) non-English trainees of low aptitude who were not completely literate in their native tongue, (2) English-speaking trainees of very low aptitude who were also almost completely illiterate on arrival and (3) trainees of marginal aptitude but who were so completely illiterate (could not read a word, knew few, if any, letters of the alphabet) that they could not hope to reach graduation level in the twelve weeks at their disposal. These two sub-groups, the literate and the hopeless cases, comprised 41.7% of all the trainees

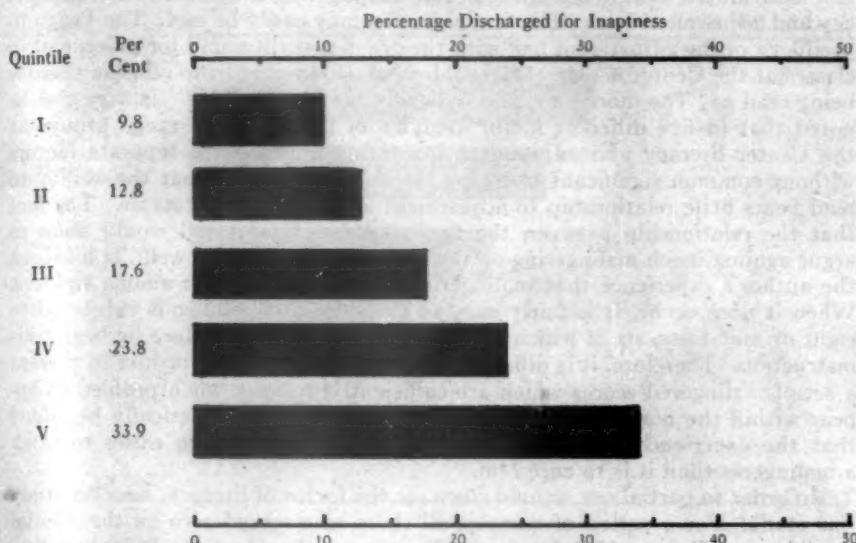


FIGURE 1. THE RELATION OF ADJUSTMENT SCORE, DIVIDED INTO QUINTILES, TO CHANCE OF OBTAINING AN INAPTNESS DISCHARGE. N IS 3614. TRAINEES OF VARYING DEGREES OF LITERACY.

in the five weeks' study. Whatever validity the adjustment test possessed could operate effectively only with 58.3% of the total group; and all of the 58.3% had been accepted by the Induction Station psychiatrist with the implication that the individual trainee had sufficient emotional stability to withstand the rigors of military life.

It is with these two attenuating factors in mind that the data on 3614 cases are presented in Figure 1. These trainees have been divided into quintiles, according to adjustment scores, Quintile I being the best adjusted twenty percent of the 3614 trainees. It will be noted that only 9.8% of the best adjusted twenty percent of all trainees were discharged as inapt. Of the next one-fifth, Quintile II, 12.8% were so discharged. The percentage of inaptness discharges continues to increase in each of the succeeding quintiles until the maximum of 33.9% of all the trainees in the highest one-fifth of maladjusted score are so discharged. In percentage terms, there are more than three times as many inaptness discharges among the most poorly adjusted one-fifth as there are among the best adjusted one-fifth. Within quintiles the factor of adjustment also operates. In Quintile V, the most poorly adjusted one-fifth, the percent receiving inapt-

ness discharges varies from 25 among the relatively better adjusted of this maladjusted group to 50 for those in the highest one percent of maladjustment. It is probably needless to remind the reader that *adjustment* in the foregoing sentences does not refer, necessarily, to the true state of a trainee's mental health but to his score on the orally administered set of 36 questions.

It would appear then that the test of adjustment has some validity despite the varying literacy of the "illiterate" trainee and despite the screening by the psychiatrist at the Induction Station. At least two objections which might be raised to the putative validity of the adjustment test come to mind: (1) The test is saturated with literacy factors; (2) malingering is common to both literacy and adjustment tests. The first objection may easily be met. The Pearson-product *r* of the adjustment test with the group test (literacy) for placement in classes at the Center is only $.141 \pm .011$, *N* of 3634, what little relation there is being read as "The more literate are slightly better adjusted." It may also be noted that in five different factor analyses of language and racial groups at the Center literacy and adjustment invariably appeared as separate factors without common significant loadings. It thus seems clear that the ability to read bears little relationship to adjustment among Army illiterates. The fact that the relationship between the two measures is so small would seem to argue against much malingering on the part of the trainees as well. It has been the author's experience that malingering is not very common among trainees. When it does occur, it is fairly easy to detect. Each soldier is subjected to eight or nine tests, six of which are of the interview type, before he begins his instruction. Therefore, it is difficult, though not impossible, for him to present a set of malingered scores which are sufficiently uniform when profiled to appear within the normal range of deviation. It may parenthetically be added that the experience of this section has been that it is much easier to catch a malingerer than it is to cure him.

In order to partial out or hold constant the factor of literacy, another study was made. For a period of months, all those who scored zero on the Mental Qualification Test (a 17-point test of literacy employed at the Induction Stations) were tabulated according to adjustment score and according to type of disposition. The 1061 trainees in this study, though completely illiterate so far as the Mental Qualification Test is concerned, were bright enough to pass either the group or the individual performance tests used for screening illiterates at the Induction Station. It should be mentioned that many of these men were somewhat literate, even though they did score zero on the literacy test. Unfamiliarity with group tests, fright and other emotional factors probably were responsible for the failure of certain of the 1061 to score on the Induction Station test. Included within this total group were, however, many hopeless illiterates—hopeless, that is, from the standpoint of being graduated from this Center. By no means, however, are all of the completely illiterate trainees barred from graduation. But it is difficult for one whose verbal aptitude is below the Center's average to become literate in the Army sense of the term unless he had some slight literacy to build upon and unless he is willing to work hard to learn.

Only 41.2% of the 1061 trainees scoring zero on the Mental Qualification Test were eventually graduated from the Center, roughly two out of every five. Figure 2 tells the story for this group. Of the best one-fifth, in terms of adjustment score, 61.7% were graduated. In the most poorly adjusted twenty percent, Quintile V, only 21.1% became graduates. There were three times as many graduates, percentagewise, in Quintile I as there were in Quintile V.

Conversely, there were over two times as many inaptness discharges (78.9%) among the most poorly adjusted as there was (38.3%) among the best adjusted. The adjustment test is clearly more effective among this relatively illiterate group than it is for the whole group of trainees with their varying shades of literacy. When the chances of graduation or discharge are relatively even, as they are in this second study, a man's set of attitudes subsumed under the title of mental health or adjustment is quite important to his disposition. Of the best adjusted (Quintile I) three out of each five men were saved; of the most maladjusted (Quintile V) only one in five is saved for military duty. Of those

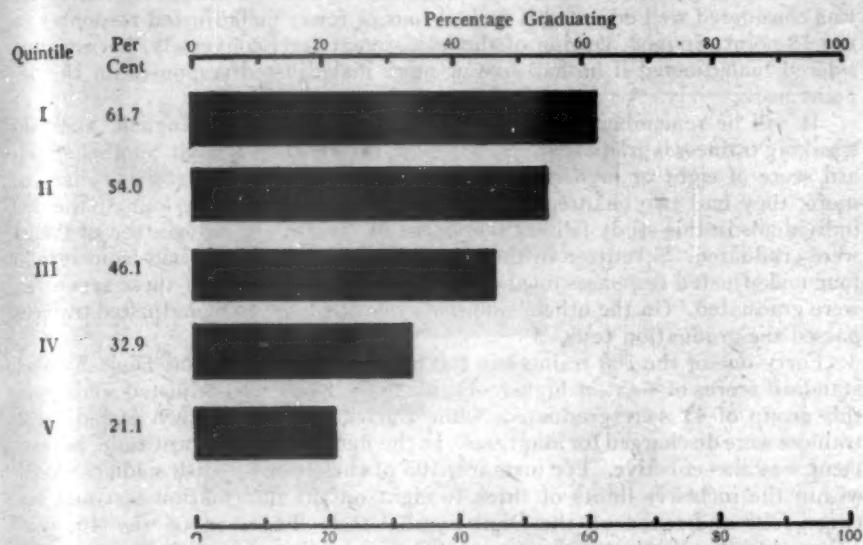


FIGURE 2. THE RELATION OF ADJUSTMENT SCORE, DIVIDED INTO QUINTILES, TO GRADUATION. N IS 1061. ALL SCORED ZERO ON THE INDUCTION STATION TEST OF LITERACY, THE MENTAL QUALIFICATION TEST.

trainees in the highest one percent of maladjustment (included, of course, in Quintile V) less than one in seven is graduated. It is belaboring the obvious to say that adjustment is one of the factors to consider when attempting to predict the type of disposition a trainee will have meted out to him.

The question of the differential validity of the adjustment test for the varying groups within the Center is next considered. Figure 3 shows in graphic fashion that validity is as much a function of the group tested as it is of literacy. The highest validity coefficient, .64, is for the non-English, Spanish-speaking group. It should be noted here that Figures 1 and 2 contain data on the English-speaking trainee only. How, it may be asked, could a non-English group be tested on an English test? In order to obtain a measure of the adjustment of the non-English, Spanish-speaking trainees, the writer translated into Spanish the first eighteen of the 36 adjustment items, which appear in their English form in Table I.

The trainee who is non-English on arrival at the Center must be relatively superior in intellect, language aptitude, adjustment and literacy in his native tongue if he is to pass the graduation tests within twelve weeks and also learn

in that time enough oral English to satisfy basic military demands. It is, therefore, not surprising that only one in five of the non-English, Spanish-speaking trainees is eventually graduated from this Center. The best indicators, among the measures of aptitude, of the disposition of this group of trainees are the Digit Symbol subtest of the Army Wechsler (1) and a Spanish translation of a locally constructed general information test. When these two types of test scores are recorded on a scattergram in such a manner that both adjustment and type of disposition are shown, the effect of adjustment is seen to be very marked, even when information and Digit Symbol scores are held constant. The whole range of adjustment score was not used in this study: An individual was considered well adjusted if he had four or fewer maladjusted responses on the 18-point, Spanish version of the adjustment test; conversely, he was considered maladjusted if he had five or more maladjusted responses on the 18-point test.

It will be remembered that only one in five of the non-English, Spanish-speaking trainees is graduated. If, however, they earned a Digit Symbol standard score of eight or higher and also earned an information score of seven or more, they had two chances in three of graduation. Twenty-four of the 300 individuals in this study fell in this restricted "bright" group; sixteen of the 24 were graduated. Seventeen of the 24 were well adjusted, i.e., had from zero to four maladjusted responses on the adjustment test. Fifteen of these seventeen were graduated. On the other hand, only one of the seven maladjusted trainees passed the graduation tests.

Forty-one of the 300 trainees in this non-English group had Digit Symbol standard scores of eight or higher. Eighteen of the 27 well-adjusted soldiers in this group of 41 were graduated, while thirteen of the fourteen maladjusted trainees were discharged for inaptness. In the middle ranges of aptitude, adjustment was also effective. For instance, 105 of these non-English soldiers scored within the inclusive limits of three to eight on the information test and between four and seven on the Digit Symbol test. Fourteen of the 46 well-adjusted men in this latter group passed the graduation tests; only four of the 59 maladjusted trainees were graduated.

For the non-English, Spanish-speaking trainees, adjustment is more important than is their tested aptitude on any single test. Only 6.3% of the maladjusted group were graduated while 10.5% of those scoring below the average of the group on the Digit Symbol test—the best single aptitude test when the criterion is disposition—passed the graduation tests. The reason that adjustment is more significant for the non-English trainee than it is for the English-speaking soldier is probably that it is easier for the former to hide behind the barrier of his lack of knowledge of English in case he does not desire military service, whether the reason is a hypochondriacal attitude toward his health, his resentment because of induction into the Army or lack of nationalistic impulses (many of these men are citizens of Latin-American countries; they came to the United States to work in the well-paid war industries).

Excepting the non-English group discussed in the preceding paragraphs, all other groups included in Figure 3 were interviewed in English on the full 36-point scale of adjustment. The Indian's adjustment score has the highest correlation with the criterion of disposition of any of the English-speaking groups. For these trainees who took the full set of adjustment questions, those who answered ten or more of the questions in a maladjusted fashion were called maladjusted. If he had from zero to nine maladjusted responses, the trainee was classified as well adjusted.

A scattergram was constructed which showed the relationship of the score on Gray's Oral Reading Test to that on the group test of literacy which is used to section the incoming trainee for instructional purposes. These two tests are more closely associated with the disposition of the trainee than are any others used by the Consultants' Section. Also shown for each trainee represented on the scattergram was his type of disposition, whether he was maladjusted or well adjusted, and whether he was above the Center average in Wechsler intelligence or below it.

For all of the 250 Indians in this study, the tetrachoric correlation is .52, adjustment versus disposition. For the 98 Indians who scored 35 or more

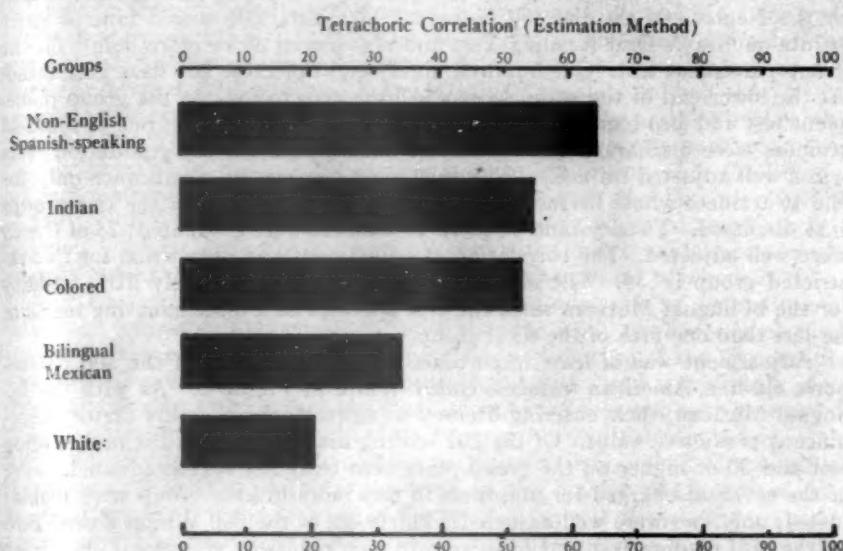


FIGURE 3. ADJUSTMENT AND DISPOSITION OF VARIOUS GROUPS. N IS 300 FOR EACH GROUP EXCEPT FOR THE INDIAN WHERE IT IS 250.

points on the group placement test and also scored eleven or more points on the oral reading test, adjustment was of no import since all of this group was graduated. For those who scored from zero to four points on the placement test or who scored zero on the oral reading test, so few graduated that adjustment was of little significance one way or the other. For the 103 Indians whose literacy scores lay between the two levels just mentioned, adjustment was of prime importance: Almost two-thirds of the graduates were well adjusted, while less than one-sixth of those discharged for inaptness were well adjusted. The validity coefficient of the adjustment test for this restricted Indian group is .67.

The validity of adjustment for all 300 of the Colored soldiers represented in Figure 3 is .52. For the extremes in literacy, as might be anticipated, adjustment means little. Of the 91 men scoring thirteen or higher on the Gray Oral Reading Test and 30 or higher on the placement test, all but one eventually was graduated. Of the 53 scoring zero on the oral reading test or scoring from zero to four points on the placement test, only five were graduated. All five of these graduates who were initially so illiterate were among the well-adjusted

group; rather interestingly, four of the five had a lower than average score on the general aptitude test, the Army Wechsler. The adjustment test was most valid for those in the intermediate range of literacy, that is, between the extremes just discussed. Six out of every seven of those discharged for inaptness in this intermediate range were maladjusted, while five out of every eight of the graduates were among the well-adjusted group. For this latter group the validity of the adjustment test is .71.

For the bi-lingual Mexican, adjustment does not have quite the same significance as for the Indian, the Negro and the non-English, Spanish-speaking trainee. The bi-lingual Mexican more nearly lived up to his initial literacy, as measured by the oral reading and group placement tests, than did the Indian or the Negro. Of the 300 bi-lingual Mexicans, 206 scored nine or more points on Gray's Oral Reading Test and also scored 30 or more points on the group placement test. One hundred ninety-eight of these 206 were graduated. At the lower end of the scale, 48 scored from zero to four on the group placement test and also scored zero on the oral reading test. All but one of these 48 trainees were discharged as inapt. The one who passed the graduation tests was a well-adjusted trainee. The adjustment test was of significance only for the 46 trainees whose literacy lay somewhere between that of the two groups just discussed. Twenty-nine of these 46 trainees were graduated; 23 of the 29 were well adjusted. The correlation of adjustment and disposition for this restricted group is .54. The adjustment test has comparatively little validity for the bi-lingual Mexican since the test operates as a discriminating measure for less than one-fifth of the total group.

Adjustment was of least importance to the disposition of the 300 native-born, old-line, American trainees, called White in Figure 3. As with the bi-lingual Mexican, their entering literacy was practically the only factor of significant predictive value. Of the 201 scoring nine or more on the oral reading test and 30 or higher on the group placement test, 194 were graduated. Five of the seven discharged for inaptness in this more literate group were maladjusted; only two were well adjusted. Thirty-six of the 300 Whites scored zero on the oral reading test and from zero to four points on the group placement test. Only two of this latter group, which was initially so illiterate, were graduated. The validity coefficient of the adjustment test for the remaining 63 who were intermediate in initially tested literacy is only .27, just slightly higher than for the total group of 300, where the r is .20. So far as predicting disposition is concerned, the adjustment test adds little of actuarial value to the measures of literacy for the White group.

It is evident from the foregoing paragraphs that adjustment is quite significant in the disposition of the Negro and the Indian and highly significant for the non-English, Spanish-speaking trainees. For the bi-lingual Mexican and for the Whites, a score on the adjustment test has relatively little value as an indicator of disposition. No satisfactory explanation of the diverse validities of the adjustment test for the English-speaking trainees is forthcoming. None of the explanations which come to mind adequately rationalize the profound differences among the four groups in the order of their r 's when disposition is the criterion and adjustment is the predictive variable.

Only the validity of the adjustment test in its association with graduation and one type of discharge—that for inaptness—has so far been considered. If the 36 items are actually measuring variations in adjustment they should show some validity for trainees who have received discharges for psychoneurosis and

for nocturnal enuresis in which no pathology of the genito-urinary system was involved. In 1944, 36 trainees were diagnosed by the psychiatrist as psychoneurotic and discharged by the Medical Corps for that reason alone or because it was one of the contributing factors in the disability. Through February, 1945, 29 trainees were discharged for nocturnal enuresis in which pathology was not the causal factor. Only one of the 36 psychoneurotic trainees was among the best one-fourth of the trainees in adjustment score, while all but five had scores above the average in maladjusted score. Twenty-one of the neurotics had scores which placed them among the highest one-fourth in maladjustment; thirteen were in the highest ten percent of maladjustment and five were in the highest one percent of maladjustment. In terms of the standard deviation of the adjustment scores of graduate trainees, the psychoneurotics have a mean maladjustment score which is 1.21 sigmas higher than the mean score for the graduates. The 36 psychoneurotics earned a mean standard score on the Wechsler Mental Ability Scale, Form B, which was higher than that of the average incoming trainee and almost as high as that of the average trainee who is graduated. The fact that this disturbed group of trainees was psychometrically brighter than the average trainee is quite interesting since the Pearson product-moment correlation of adjustment score with the Wechsler is .180 $\pm .010$ (N of 4261), the r being read as "The better adjusted are somewhat brighter." Adjustment, *per se*, uncomplicated with intellectual factors as such, appears to be the causal agent in most of the discharges for psychoneurosis.

Nocturnal enuresis without pathology among adults is so generally considered an indicator of poor mental health that the Army discharges such cases whenever they are found. The average maladjusted score of the 29 enuretics was only 1.3 points below that of the psychoneurotics and was slightly more than one full sigma higher than the mean score of trainees who were graduated, in terms of the standard deviation of the latter group's adjustment scores. Only five of the 29 enuretics were among the better adjusted one-half of the trainee population. Nineteen of the group were in the highest one-fourth of maladjusted score; 11 of the 29 were in the top ten percent of maladjusted score; and four were in the highest five percent of maladjustment. Unlike the psychoneurotic group, the enuretics were slightly below the Center average in Wechsler standard score; they were, however, comfortably above the average score earned by those trainees who are discharged for inaptness.

Data on the reliability of the 36-point test have not as yet been presented because, though reliability is necessary in a test, it is of minimal importance in comparison with validity. Reliability, as inferred from a single administration of the test, has twice been checked by correlating the odd-even items and then applying the Spearman-Brown prophecy formula. For 100 cases the reliability was .932; for 300 cases in a later study the r was .923. The test-retest reliability was determined by re-testing 129 trainees after an average lapse of 64.32 days. The standard deviation of this latter mean was 32.41 days; the range was from seven to 122 days. The coefficient for this group was .848. The test-retest reliability is noticeably lower than the single administration type of reliability. Subtle shifts in the trainee's mood and his "feeling tone" may account for some of the difference in the two kinds of reliability coefficients. It is of interest, however, that the mean difference in maladjustment score from one testing to the next was only one-tenth of a point. The reliability of the adjustment test appears to be adequate when the comparatively small number of items contained in it is considered.

TABLE I
DATA RELATING TO VALIDITY AND RELIABILITY OF THE INDIVIDUAL
ITEMS OF THE ADJUSTMENT TEST

R*	DV†	VH**	Item No.	Item
.53	.23	.32	1.	Does it bother you to sleep and eat and wash with so many men?
.73	.25	.27	2.	Did your draft board give you a raw deal?
.68	.44	.16	3.	Could you do more for your country on your civilian job than you can here?
.93	.50	.42	4.	Did they give you a good physical examination at the Induction Station?
.91	.57	.64	5.	Are you strong and healthy enough to be a soldier?
.80	.46	.46	6.	Does it bother you to stand and wait in a group?
.40	-.02	-.04	7.	Do you feel blue very often?
.64	.40	.16	8.	Do you feel very tired toward the end of the day?
.60	.23	.18	9.	Does it bother you to talk to a person that you've just met?
.48	.33	.34	10.	Do you often feel just miserable?
.83	.18	-.07	11.	Are your feelings easily hurt?
.58	.23	.11	12.	Do you have trouble sleeping at night because you lie awake thinking about things?
.89	.43	.54	13.	Are you well most of the time?
.76	.31	.37	14.	Do you feel dizzy quite often?
.80	.43	.59	15.	Does you hip or back bother you very much?
.75	.37	.46	16.	Do you get short of breath easily?
.84	.46	.53	17.	Do you have many headaches?
.78	.30	.23	18.	Do your feet hurt you when you walk a lot?
.86	.17	.16	19.	Have you had lots of hard luck?
.80	.33	.10	20.	Do you feel lonely most of the time?
.62	.03	.13	21.	Do you often feel that the whole world is against you?
.61	.16	-.04	22.	Have people played mean tricks on you when they had no reason to?
.75	.00	.17	23.	Is anyone talking about you behind your back?
.82	-.10	.00	24.	Is anyone working against you behind your back?
.56	.27	.10	25.	Do you often wish you could be as happy as other people seem to be?
.66	.43	.24	26.	Do you worry about a lot of things?
.78	.23	.42	27.	Do you have trouble keeping your mind on what you are doing?
.67	.38	.34	28.	Do you feel useless and no-account quite often?
.78	.19	.21	29.	Do you often have trouble getting started doing things?
.82	.20	.11	30.	Do you sometimes feel so low that you don't care what happens to you?
.89	.25	.18	31.	Do you feel vomity (or as though you'd throw up) very often?
.90	.30	.37	32.	Do you often feel faint, as though your legs would give way?
.76	.32	.28	33.	Do you often feel nervous and trembly and shaky inside?
.68	.50	.44	34.	Do you often have headaches that feel as though you had a tight band around your head pressing in?
.65	.44	.45	35.	Do you usually feel tired and dopey in the morning as though you hadn't slept at all?
.73	.28	.23	36.	Tunnel vision (Question too long to give here.)

* Based on 100 cases, test-retest.

II. DATA ON THE INDIVIDUAL ITEMS

Three correlations precede each individual item in Table I, in which all of the adjustment questions are given. The tetrachoric r 's in this table, like the ones given in Figure 3, were estimated from the computing diagrams (5) devised by Chesire, *et al.* The test-retest reliability of each item is given in Table I and also two validity coefficients, one of which is the dispositional validity (graduation *vs* inaptness discharge), while the other is the validity for hypochondria. Hypochondria is here defined in this manner: An individual was considered hypochondriacal if he repeatedly reported himself sick in the morning, was returned to duty by the medical officers five or more times—nothing being found organically wrong with him—and if he was never hospitalized by the physician in charge of sick call or returned to his quarters to recover from his putative ailments. Conversely, if a man never went on sick call a single time, he was presumed to be free from hypochondriacal taint.

The dispositional coefficients appearing in the second column of Table I are somewhat higher than they should be because an equal number of graduates and trainees discharged for inaptness is included. This heavy weighting of the inapt in the tetrachoric quadrants causes a distortion of about .05 in a r of .50 as checked empirically. For coefficients of lower value, the distortion is proportionately less. The r 's for hypochondria in the third column are also too high but for a different reason. The magnitude of these r 's is somewhat inflated because they represent extremes in distribution, the middle group being excluded. Since the exact association of each item with hypochondria, as here defined, was not so much desired as were the relative validities of the separate items, the omission of the middle ranges is of little importance.

An inspection of the table will reveal that the validities of items 4, 5, 6, 13, 15, 17, 34 and 35 are rather high for both criteria. A trainee who feels that his health is bad appears not only to frequent sick call more often but also to obtain inaptness discharges with greater than chance incidence. Items 5, 6, and 13 are general, overall questions relating to health; the other quite valid questions are, with the possible exception of item 6, ones relating to more definite and specific symptomatology. Items 3, 8 and 20 have good dispositional validity but are relatively poor for hypochondria, while the converse is true for item 27. Generally, the two types of validity tend to vary together. The rank-difference correlation between the two validity coefficients for all 36 questions is .62. When the validities for those items referring to health are correlated, the rank-difference coefficient becomes .79. The health items are items four and five in Army Adjustment and all of the hysteria and hypochondria sets, fourteen items in all. One may infer that many of the trainees who persisted in going on sick call day after day did not apply themselves too vigorously in the Center's school, thus eventually failing to meet graduation standards within the allotted time.

It is possible to obtain a linear relationship between a trainee's adjustment

† Dispositional validity, based on 100 graduates and 100 trainees discharged for inaptness.

** Validity for hypochondria, based on 100 Negro trainees, 50 of whom had been returned to duty by the Medical Officers five or more times and none of whom was hospitalized or marked "Quarters." The other 50 had never reported on sick call a single time. Total population was 515, 151 of whom had never been on sick call; 72 had been five or more times marked duty and never hospitalized; 282 had been on sick call one or more times but did not fit into the restricted sick call group.

score and his hypochondria ratio, as determined by dividing the number of days he was in the Center into the number of times he was referred back to duty from sick call—i.e., when no organic illness was found. The Pearson product-moment coefficient of correlation for an N of 400 is .314. This r is probably attenuated for two reasons: (1) the marked skewness of the percentages, especially noted in the piling up in the zero category; (2) the fact that the percentages were treated, in marking off the step intervals on the scattergram, as though they were raw scores—that is, an equal number of percentage points was assigned to each step interval just as though the percentages had the same value at every point on the scale. Despite the possible distortion of these two factors, however, the resultant coefficient of .314 is significant, showing that the more maladjusted in score tended more often to present the Army medical officers with complaints which had no somatic basis and which no medication could permanently cure.

The set of items with the greatest dispositional validity is the first set of six, those which came originally from the Army Adjustment test. A close second in dispositional validity is the hypochondria set, items 13 through 18. The set with the least validity is the one (items 19 through 24) which derived from a test of paranoid tendencies—a test which in its longer form (3) showed quite respectable validity. This same set of six questions had little validity for the other criterion, hypochondria. The hypochondria items are, as might be expected, closely related to unnecessary frequenting of sick call. The hysteria questions (items 31 through 36) have relatively good validity for both criteria as do the depression items (25 through 30). The items taken from the 22-point "Concentrated Bell" have adequate validity for disposition but little for hypochondria. Interestingly enough, the original 22 items (3) had quite good validity for hypochondria; apparently this association was lost when sixteen items were eliminated.

The most reliable of all adjustment questions is the fourth one, closely followed by number five. Questions relating to a trainee's overall attitude toward his physical fitness for military duty appear to be less subject to temporal change than is the case with other types of items. Items four and five are valid as well as reliable. The least reliable item, the seventh one, is also one of the least valid when both types of criteria are considered. The two extremes in reliability give a false implication of the relation of reliability to validity in this test, however. The rank difference correlation of the individual reliability coefficients with the validity coefficients for hypochondria is .23. Reliability when correlated with dispositional validity gives a rank difference correlation of .24. When it is remembered that the two types of validity correlate .62, it is obvious that variance in reliability is not of prime importance to the validities here under consideration. Why there is no greater relation between test-retest reliability and validity in these questions is not clear. It does not appear to arise from lack of range in the reliability coefficients since there is a spread from .40 for the seventh question to .93 for the fourth one. Nevertheless, there does seem an implication present in these data for those who construct measures of adjustment: It is that they should address their full energies toward the goal of validity, forgetting the much more easily obtained reliability, which will probably be adequate anyway if the *sine qua non*, validity, is once obtained.

Once the elementary question of the validity of a given test has been satisfactorily answered in a quantitative fashion, the user of a given psychometric instrument may become curious regarding the number of independent factors it contains. Curiosity on the part of the Consultants' Section eventuated in such

an analysis, carried through according to the technique given by Peters and Van Voorhis (8). Four factors were isolated. Two were rather easy to name because of their uniform and heavy loadings in individual sets of questions employed in the adjustment test. For this reason one was called Depression and the other Paranoia. The other two factors were somewhat unsatisfactory so far as naming was concerned. One contained heavy loadings in the most clinically diagnostic hysteria items but it also contained significant loadings in so many others that it was impossible to name it with any degree of certitude. The fourth factor contained no recognizable symptomatology of a clinical nature but in it there were found almost all of the items with a high dispositional validity; consequently, it was tentatively called a Disposition factor. This last factor came closest to having operationally defined nomenclature; the others were admittedly given the name of the set of questions which were *presumed* to measure a given syndrome. One learns in dealing with adjustment tests that it is commendable to view the names given to certain questions with reservation and skepticism until they have proved their title to the patronymic by legitimate means, i.e., through validation studies. And with the possible exception of the so-called Disposition factor, none of the others in this factor study has been proved to be measuring that which its name implies.

A brief mention should be made of the manner of administration of items in the adjustment test. In case a trainee had no maladjusted answers to the first set of items, Army Adjustment, he was further asked (a) whether he liked Army food and (b) whether he liked his fellow trainees. If he answered both in the affirmative, it was assumed that he was quite well adjusted to Army life, accepting it with an aplomb that was something more than resignation. If his responses to the hypochondria items were all or mainly maladjusted, he was further questioned concerning his eyes, stomach, heart, chest and possible constipation. If, however, he had shown no hypochondria on the set of six questions, he was asked whether anything at all was wrong with him. In this manner a marked spread in hypochondriacal tendency could be obtained. If the trainee claimed someone was talking about him or working against him behind his back, he was asked to specify who it was and to give all pertinent details so that a measure of his paranoiac tendencies could be obtained. If most or all of the depression questions were answered in a maladjusted fashion, the trainee was asked whether thoughts of self-destruction often occurred to him, thus giving the interviewer some insight into the depth of his admitted depressive tendencies. If some of the hysteria items were answered in the affirmative, especially the one relating to tunnel vision, further questioning relating to *globus hystericus* and to possible functional paralysis was attempted. A number of psychiatric referrals were made from this latter set of questions. More significant from the standpoint of personnel work, however, was the fact that the training companies and the individual teachers were warned in advance when any trainee showed a symptomatic pattern of maladjustment of clinical significance.

The 36 adjustment items with their occasional addenda take from one to five minutes to administer orally while at the same time recording verbatim the significant parts of all maladjusted responses. The items and the responses are part of the permanent personnel card which is filled out for each trainee. It should also be mentioned that all questions are scored plus (maladjusted) or minus (adjusted). If the first response of a trainee could not be scored, he was further questioned until the interviewer reached a decision. Whether the dichotomous scoring of each item affected its validity is not presently known,

But it is clear that in a few minutes' time an objective, permanent record of certain phases of a trainee's attitudes of patent importance to his Army career was obtained. In such a form the test did not place a premium on clinical insight and could be administered by interviewers, some of whom came to the section with no training in individual psychometric techniques.

III. SUMMARY AND DISCUSSION

It has been shown in this paper that a short, orally administered adjustment test had validity in an Army Special Training Center. Its validity was demonstrated in two ways. First, it was shown to be associated with a trainee's type of disposition, that is, whether he was graduated and retained in the Army or failed to graduate and was returned to civilian life with a discharge for inaptness. Second, the test was shown to be associated with the number of times the Army physicians could find nothing organically wrong with a trainee who reported himself as ill. In general, an item valid for the first criterion was also valid for the second. The test-retest reliability of the individual items was found to have a relatively low association with either type of validity.

The dispositional validity of the test as a whole was shown to be partially determined by two factors, the literacy of the "illiterate" trainee and the racial or linguistic grouping to which he belonged. The effect of literacy is easily understood. If a trainee is so illiterate that he knows at best only a few letters of the alphabet, it is very difficult for him to attain an approximate fourth-grade level of literacy in twelve weeks; consequently, so few in this category were graduated that adjustment, either good or bad, could play little part. On the other hand, a considerable number of the incoming "illiterates" could either pass both of the graduation tests on arrival or so closely approximated the literacy requirements for graduation that adjustment could have no effect on their disposition, since all of them were eventually shipped as graduates of the Center. For those trainees of intermediate literacy, that is, who lay between these two extremes, adjustment was of prime importance, being perhaps the most important single variable in their disposition.

The second important factor in the dispositional validity of the adjustment test was the matter of race and linguistic grouping. Generally, the adjustment of the non-English, Spanish-speaking trainee and the trainee of either American Indian or Negro descent was strongly associated with his type of disposition. For the non-English, Spanish-speaking trainee, who, of course, had no literacy in English on his arrival, adjustment was of more importance than aptitude, insofar as the latter was determined by the two tests with the highest association value with the criterion of disposition. For the Indian and for the Negro of intermediate literacy, adjustment was of marked significance in the type of disposition he obtained. For the bi-lingual Mexican and for the old-line, native-born, American White, adjustment did not have the same value as for the other groups, even in the so-called intermediate range of literacy. An attempt to rationalize these group differences in adjustment test validity brought forth some conjectures which seemed immediately plausible but which lost their plausibility upon more rigorous analysis. Consequently, no attempt will be made to explain the anomaly of the differential group validity coefficients. But it must be admitted that racial and linguistic groupings of trainees are determining factors in the dispositional validity of the adjustment test, even though the etiology of those differences cannot be satisfactorily explained.

One unsolved problem which derives from this study is the problem just

considered. Another even more important one is this: While many more of the very maladjusted tended to be discharged for inaptness, regardless of literacy or of measured aptitude, than was the case with the well adjusted, it is true that many of the maladjusted did graduate. What difference exists, one may ask, between the highly maladjusted trainee who graduates and the maladjusted soldier who receives an inaptness discharge? The converse statement could be made for the well adjusted in the same manner. One possible, but untested, hypothesis occurs to the writer, so far as the maladjusted in score are concerned. The first and most heavily loaded of all the factors found in the adjustment test is depression. Though all the depression set had high and quite significant loadings in this factor, other items in the test also were included. Consequently, it may be inferred that some of the trainees who earned high maladjusted scores were suffering from what one Army psychiatrist called "reactive depression" owing to induction into the Army. If some of these "reactive depressives" overcame the mood induced by the induction shock during their stay at the Center, it may be assumed that after their recovery they applied themselves to their school tasks with more zeal; on the other hand, no such change would be reflected in the behavior of the truly maladjusted, to whom induction into the Army was only an incident. One other possible explanation of the problem is the assumption that although all of those high in maladjusted score were equally maladjusted, some of them through differential training in their earlier years learned to inhibit overt expression of their latent maladjustment through the same type of mechanism which is used by some paranoiacs who conceal their paranoia until a traumatic episode occurs which brings it to light. If the latter explanation appears to have some validity, it behooves those working in the area of adjustment to attempt the measurement of this inhibitory process, for with such a measure more effective predictions could be made from an adjustment test.

The question of the validity of the adjustment test for other groups besides trainees in an Army Special Training Center may occur to the reader. It is the opinion of the writer that the items, other than those six derived from Bell's *Adjustment Inventory* (4), would show little validity for other groups, simply because they are too "strong." There is considerably more hysteria, hypochondria, paranoia and depression among these men of low socio-economic status and of marginal intellect than is true of groups approximating normal intelligence and socio-economic level. For these latter groups, more subtle questions would doubtless be required. One may hope, however, that it shall be possible to devise a short testing instrument for oral administration which will be just as valuable to the clinical psychologist as the 36 items considered in this article have proved to be for Army illiterates. Such an adjustment test should ideally consist of short, highly valid sets of questions, which would give readings of diagnostic value for many well-defined syndromes of maladjustment.

It is also possible that future research may show that a properly validated adjustment test, either oral or written, can be of aid in scholastic prediction in high schools and colleges, particularly for those students of marginal aptitude and preparation, corresponding in the present study to "illiterates" of intermediate literacy. This statement is made because it is logical to assume that the near failures in our public schools are occasionally the victims of poor motivation resulting from poor adjustment. It also seems probable that an oral adjustment test in the hands of a trained clinician would be of marked value in personnel work in industry. An industrial interviewer, gifted in obtaining rapport with applicants for jobs, would more likely obtain true answers and

significant inferences by the person-to-person method of interview than he would with a paper and pencil test of adjustment. It is a hypothesis, in any event, which appears worthy of testing, though the research required would no doubt be considerable. And there could be no assurance, as there is none in the present study, that the results, even though positive, would not be so parochial in their derivation that no general application would be admissible.

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PSYCHOLOGY AND WAR: NOTES

Establishment of Research Board for National Security. Establishment of the Research Board for National Security by the National Academy of Sciences has recently been announced in a joint statement by the Honorable Henry L. Stimson, Secretary of War, the Honorable James Forrestal, Secretary of the Navy, and Dr. Frank B. Jewett, President of the National Academy of Sciences.

The objective of the Board will be to continue, pending final consideration by Congress on creation of an independent agency, the close cooperation between civilian scientists and the Armed Services which has proven to be such a vital element in the prosecution of the war.

Composed of high ranking officers responsible for the needs and plans of the Army and Navy, together with an equal number of distinguished representatives of science, engineering, medicine, and industry, this Board includes many of the features of the Office of Scientific Research and Development, which has proven so successful as a wartime agency in mobilizing civilian scientists and coordinating their work with the requirements and operations of the Armed Services.

The charter of the new Board provides for up to twenty civilians selected with the advice of the Chairman of the National Research Council and the Council of the National Academy of Sciences; also up to ten high ranking officers each from the Army and the Navy, nominated by the respective Secretaries, all to be appointed by the President of the Academy. Five members of this Board constitute its Executive or operating Committee, three of the five are civilians, of whom one is chairman of the Board and the Executive Committee. The two Army and Navy members are officers charged in their respective departments with coordination of research. The members of the Board serve as such without compensation. The research activities are to be carried out under contracts whereby existing laboratories and facilities will be used wherever practicable.

The duties of the Board are specified in its charter as follows:

It shall be the duty of the Board to formulate programs of scientific research and development relative to problems of national security, to direct and conduct the scientific study of such problems and to advise the Secretary of War and the Secretary of Navy on the applications of science to national security. Science is here broadly interpreted to include the employment of scientific method of analysis, experiments and tests in any branch of science or technology, including engineering, medicine, psychology, and biology. Special consideration shall be given to possibilities arising from progress in science and technology. The Board shall, in no way, relieve the Army or Navy or other governmental agencies of their responsibility for, or authority over, research and development work conducted under their legal cognizance.

The initial membership of the Research Board for National Security follows:

EXECUTIVE COMMITTEE

KARL T. COMPTON, *Chairman*, President, Massachusetts Institute of Technology
ROGER ADAMS, Head, Department of Chemistry, University of Illinois

A. R. DOCHÉZ, John E. Borne Professor Experimental Medicine and Surgery, College of Physicians and Surgeons, Columbia University

BRIG. GEN. W. A. BORDEN, Director, New Developments Division, War Department
Special Staff

REAR ADMIRAL J. A. FURER, Coordinator of Research and Development, Navy Department

FRANK B. JEWETT, *Ex Officio*, President, National Academy of Sciences

BOARD MEMBERS

Civilian

E. K. BOLTON, Chemical Director, E. I. du Pont de Nemours

OLIVER E. BUCKLEY, President, Bell Telephone Laboratories

BRADLEY DEWEY, President, Dewey and Almy Chemical Company; sometime Rubber Director

LEE A. DU BRIDGE, Professor of Physics, Dean of the Faculty of Arts and Science, University of Rochester; Director, Radiation Laboratory, National Defense Research Committee

H. S. GASSER, Director, Rockefeller Institute for Medical Research

A. BAIRD HASTINGS, Hamilton Kuhn Professor of Biochemistry, Harvard University

J. C. HUNSAKER, Chairman, National Advisory Committee for Aeronautics; Professor of Mechanical and Aeronautical Engineering, Massachusetts Institute of Technology

W. S. HUNTER, Professor of Psychology, Brown University; Chief, Applied Psychology Panel, National Defense Research Committee

ZAY JEFFRIES, Vice-President, General Electric Company, Pittsfield, Massachusetts

C. C. LAURITSEN, Professor of Physics, California Institute of Technology

E. O. LAWRENCE, Professor of Physics, University of California

LINUS PAULING, Chairman, Division of Chemistry and Chemical Technology, California Institute of Technology

H. W. PRENTIS, JR., President, Armstrong Cork Company; Past President, National Association of Manufacturers

I. I. RABI, Professor of Physics, Columbia University

ELVIN C. STAKMAN, Professor of Plant Pathology, University of Minnesota

OSWALD VEBLEN, Institute for Advanced Study, Princeton, New Jersey

LEWIS H. WEED, Director, School of Medicine, Johns Hopkins University; Chairman, Division of Medical Sciences, National Research Council

Army

DR. E. L. BOWLES, Expert Consultant to the Secretary of War and Special Consultant to the Commanding General, Army Air Forces

MAJ. GEN. LEVIN H. CAMPBELL, JR., Chief of Ordnance

LT. GEN. B. M. GILES, Army Air Forces

MAJ. GEN. JOHN E. HULL, Chief of Operations Division

MAJ. GEN. HARRY C. INGLES, Chief Signal Officer

MAJ. GEN. NORMAN T. KIRK, Surgeon General of the Army

MAJ. GEN. WILLIAM N. PORTER, Chief, Chemical Warfare Service

MAJ. GEN. WILHELM D. STYER, Chief of Staff, Army Service Forces

MAJ. GEN. ALBERT W. WALDRON, Chief, Requirements Section, Army Ground Forces

Navy

VICE ADMIRAL FREDERICK J. HORNE, Vice Chief of Naval Operations

VICE ADMIRAL ROSS T. MCINTIRE, Chief, Bureau of Medicine and Surgery

VICE ADMIRAL BEN MOREELL, Chief, Bureau of Yards and Docks

REAR ADMIRAL H. G. BOWER, Special Assistant to the Secretary

REAR ADMIRAL W. J. CARTER, Assistant Chief, Bureau of Supplies and Accounts

REAR ADMIRAL E. L. COCHRANE, Chief, Bureau of Ships

REAR ADMIRAL W. S. DE LANY, Assistant Chief of Staff, Readiness, Cominch

REAR ADMIRAL GEORGE F. HUSSEY, JR., Chief, Bureau of Ordnance

REAR ADMIRAL DEWITT C. RAMSEY, Chief, Bureau of Aeronautics

Testing Civilian Employees in Army Service Forces. MAJOR WALTER C. VARNUM, formerly of the department of psychology, Los Angeles City College, has been appointed Chief, Civilian Testing Section, Headquarters, Army Service Forces. The mission of this section is the establishment and supervision of industrial testing programs affecting more than 750,000 civilians employed by Army Service Forces. WILLIAM C. KVARACEUS and HERBERT WEAVER are assisting Major Varnum in the capacity of Personnel Technicians. WALTER N. DUROST served as Technical Consultant in the organizational stages of the program. About thirty psychologists have already been placed as Test Technicians in charge of the programs at various installations and five have been placed as Directors of Testing at headquarters offices of the staff divisions, technical services and service commands which make up Army Service Forces. An active recruitment program is under way to obtain qualified technicians to meet the demands of the expanding program.

BOOK REVIEWS

Psychology for the returning serviceman. COMMITTEE OF THE NATIONAL RESEARCH COUNCIL. Washington, D. C. and New York: Infantry Journal, Penguin Books, 1945. Pp. 245.

The success of *Psychology for the Fighting Man* was so great and its reception so favorable that the Emergency Committee in Psychology of the National Research Council moved forward with the sponsorship of a similar popular book for the returning serviceman. Similar procedures which involved securing short sections prepared by technically qualified psychologists and rewriting them into a coherent whole, were followed in preparing the text. Irving L. Child of Yale University and Marjorie Van de Water of Science Service acted as editors with substantial assistance from Edwin G. Boring and Col. Joseph I. Green, both of whom played important roles in the development of *Psychology for the Fighting Man*. That the result is a cooperative effort of magnitude is indicated by the long list of collaborators and critics who either prepared or checked material for the book. The outcome is a volume that is very readable and yet based upon the technical skill and opinions of many experts.

The first half of the book covers topics of interest to all servicemen as indicated by the chapter headings: *Out of uniform, Meeting problems and looking ahead, Choosing a job, Learning new skills, Getting married, Returning to your wife, Being a father, The veteran as a citizen, and Social conflict.* The second half is concerned with the adjustment of special groups of servicemen who have suffered the rigors of war in an unusual degree or have returned with shock or injury. Its chapter headings are *POW, Getting well, Building up, NP, Combat nerves, Injuries to the nervous system, Injury to sight or hearing, and Loss of limb.* The final chapter *Years of your life* is addressed to all.

In length, the book is shorter than the *Psychology for the Fighting Man*. At times one wishes that particular parts were more detailed. Less is known about many of the areas covered in this book than was the case with its predecessor. One misses the realistic atmosphere, which from the outset is given in *Psychology for the Fighting Man*, by the very substantial and quite specific material of obvious practical utility that grows out of the psychology of sensation, perception and learning. Somewhat greater difficulty may have been had in organizing the material for this book and in securing agreement on its contents. And often one feels that some of the statements made are in the nature of platitudes or generalizations based upon good common sense rather than the specific findings of research. This is not a criticism of either the authors or the editors, but of the status of our field. A book such as this lies in the area of personality adjustment, an area in which the science of psychology is less further advanced than in those areas for which there is a tangible relation to preparation for and participation in combat.

But whatever the limitations of our present knowledge, this book does come to grips with many of the practical problems of the returning veteran. In addition to many specific helps, it should give him some insight into his own problems of adjustment, some comfort in finding his problems are not unique but are shared by many millions of other persons, and some feeling for the psycho-

logical rather than the naive approach to human and social problems. One can express a wish for as wide a circulation as its predecessor. Both are significant experiments in making scientific content and modes of thinking available in popular form to a wide public.

JOHN E. ANDERSON.

University of Minnesota.

LINTON, R. *The cultural background of personality.* New York: D. Appleton-Century, 1945. Pp. xix +153.

This brief book represents the published form of five lectures on the general subject of the interrelations of Culture, Society, and the Individual, given under the auspices of the Cooper Foundation at Swarthmore College in 1943. It is dedicated "To the students whose questions may induce their professors to read this book." Perhaps the chief criticism which may be made of it is that their professors will find it inadequate and unsatisfactory, while they themselves will turn from it before finding the answers to their questions because of the very dullness of its style.

The first three chapters are concerned with defining the individual, culture, and society, with an attempt to draw together the attitudes of those primarily interested in sociology, anthropology, and what Linton refers to as "personality psychology." The last two chapters *Personality* and *The Rôle of Culture in Personality Formation* are the ones which will be of interest to the psychologist.

The average psychologist, however, will be dissatisfied with both of these. Most of them will be totally at variance with one of the basic statements, "We may take as our first premise that the function of the personality as a whole is to enable the individual to produce forms of behavior which will be advantageous to him under the conditions imposed by his environment" (86). Personality is an end product which characterizes the individual, rather than a constituent element serving a functional rôle in this sense. Nor will most psychologists be any happier at the division of responses into those which are emergent (evoked by new and unfamiliar situations), and those which are established (habitual). To Linton there are two important responses, those which are specific and developed through repetition, and those which are generalized and hence evolve into *value-attitude systems*. Even though he takes into full account the degree to which every response includes both overt and covert elements, he has not sufficiently accounted for those responses which arise out of complexes, repressions, and the deeper, more significant, levels of the unconscious.

The final chapter on *The Rôle of Culture in Personality Formation* is of course the crux of the volume, but it is even less satisfactory than the preceding one. He dismisses, rightly, the theory that innate, biologically determined factors could account for personality configuration. Next he goes on to demonstrate the manner in which culture can do this. Probably the widest disagreement will be with the statement that "common personality elements together form a fairly well-integrated configuration which may be called the *Basic Personality Type* for the society as a whole" (129, italics his). Even though this concept is slightly modified by the addition of a variation, "status-linked response configurations may be termed *Status Personalities*" (130). Even the most ardent adherent of a type theory of personality would scarcely agree to so drastic a delimiting of type. And even were one to admit it, the theory that it results primarily from the parent-child relationship as culturally determined seems

hardly adequate. What Dr. Linton seems to lose sight of, even in his theory of a culture construct pattern (which corresponds to the mode of the variations within a real culture pattern), is that the culture pattern of any society must of necessity contain attitude-value systems which are at variance with and in conflict with one another. Many of the differences as well as similarities in personality arise from the individual mode of reaction to these conflicting differences in accordance with the motivations, the needs, and the temperaments, as well as the childhood experiences of the individuals concerned.

While the book is of value for its attempt to draw these three disciplines of anthropology, sociology and psychology together in the effort to understand personality; and while most readers will appreciate the attempt to achieve a consistent terminology for the three disciplines; it will nevertheless remain unsatisfactory for the vast majority of psychological readers.

DOROTHY T. SPOERL.

Jeffersonville, Vermont.

NOBLE, RUTH CROSBY. *The Nature of the Beast.* Garden City, N. Y.: Doubleday Doran, 1945. Pp. 224.

Ruth Crosby Noble has written "a popular account of animal behavior from the point of view of a naturalist." The book is based largely on the research results, literature reviews, lectures and informal notes of the author's late husband, Dr. G. Kingsley Noble.

Dr. Noble was a curator of the American Museum of Natural History, New York City. He effectively combined, in his studies of animal activities, the research procedures of the field naturalist and of the laboratory investigator. Dr. Noble realized that many problems of the sensory, motor and motivational capacities of animals which are discovered by field observations must be finally investigated by controlled experiments. He acted on this conviction and organized and put into operation a model behavior research laboratory in the American Museum. The work of this rather unique laboratory reflected Dr. Noble's wide research interests; the book under review has revealed even more extended interests. These ranged from sensory capacities of the wood tick to the social organization of primate groups.

Those who are interested in comparative psychology can judge the range of subject matter in *The Nature of the Beast* by the chapter headings: animals' domain, world of sensation, creatures of instinct, animals can learn, intelligence tests, higher intelligence, emotions, societies, social rank, staking out territory, sex recognition, courtship, parenthood, animals at play, hormones and behavior, abnormal behavior, and behavior and evolution. These subject headings suggest, furthermore, the pertinence of the book to the field of academic comparative psychology. There is a selected bibliography of ninety-five titles of which thirty-two are references to publications of Dr. Noble. There is also an eight page index.

Evaluation. The information in the book is factually correct. Ruth Crosby Noble did not compromise accuracy of research results and literature reviews in order to present these in a popular and interesting style. The manuscript was read by Doctors Robert M. Yerkes, Carl J. Warden, Frank Beach, T. C. Schneirla; and parts were read by Doctors Ernst Mayr and Ludwig Hirning. Therefore, both comparative psychologists and naturalists have had the opportunities to verify the author's transcriptions and reproductions of Dr. Noble's collected information.

The subjects dealt with in *The Nature of the Beast* are presented with a commendable breadth of perspective, and yet the importance of details is duly emphasized. Students of animal or even of human behavior who read the book will discover interesting and stimulating facts not generally considered in psychology courses. This is true because in this volume the refreshing viewpoints of field naturalists are organized with the results of controlled laboratory experimentation. Also, psychologists will learn something of species of animals which are rarely used as subjects in comparative psychological laboratories.

The subject book is said to be popular. The sub-title reads: "A popular account of animal psychology from the point of view of a naturalist." This should not repel the serious student of animal behavior, for although the style is free and interesting every chapter is filled with facts.

The reviewer suggests that *The Nature of the Beast* should be used as collateral reading in every course on comparative psychology.

C. R. CARPENTER.

The Pennsylvania State College.

NOTES AND NEWS

JOHN WALLACE NYGARD, 2nd Lieut., A.U.S., died at the age of thirty-seven years at Walter Reed Hospital after an illness of several months contracted during service in France. Lieut. Nygard was on leave from the University of Tulsa, Tulsa, Okla., and had served as psychologist with the 199th General Hospital in France. Before going to the University of Tulsa, he had served as psychologist at the National Training School in Washington, and had been psychologist in the Public Health Department of North Carolina. He received his B.A. from a Wisconsin State Teachers College in 1928, his M.A. from Iowa in 1929, and his Ph.D. from Michigan in 1937. He entered the Army in May, 1942.

STUART HENRY ROWE, who was head of the department of psychology and pedagogy (1904-10), Brooklyn Training School for Teachers, died, June 5, at the age of seventy-six years.

BROTHER CYRIL LEO, an instructor in Manhattan College (New York City), who taught courses in psychology, philosophy, and the classics, died, May 30, at the age of thirty-five years.

GEORGE D. STODDARD, state commissioner of education and president, University of the State of New York, has been named as the tenth president of the University of Illinois to succeed **ARTHUR CURTS WILLARD**, when the latter retires, July 1, 1946. Dr. Stoddard has been in his present position since July 1, 1943.

At the commencement at the University of Nebraska held on May 25, 1945, the LL.D. degree was conferred on **EDWIN RAY GUTHRIE**, professor of psychology at the University of Washington at Seattle. Dr. Guthrie, who received his B.A. degree from Nebraska in 1907 and his M.A. in 1910, is the fifth psychologist with undergraduate training at Nebraska to receive an honorary degree from his Alma Mater, and the fourth President of the APA to be so honored.

PAUL R. RADOSAVLJEVICH, professor of experimental education, New York University, will be retired, August 31, after more than forty years as a student and member of the staff. On March 22, Dr. Radosavljevich presented to the university his library of some 15,000 volumes and an equal number of pamphlets and periodicals on education, to be known as the Dean Thomas M. Balliet Teachers Library, in honor of the late dean (1904-19) of the School of Pedagogy (now the School of Education).

The president of the Executive Council, Kappa Delta Pi, honor society in education, **THOMAS C. McCACKEN**, dean, College of Education, Ohio University (Athens), has announced the following elections (among others) to the Laureate Chapter of the society: **CARL EMIL SEASHORE**, dean emeritus, Graduate School, the Iowa State University, psychologist of high rank whose studies of the psychology of music have been of signal value in the field of music education. Dean McCracken also announces that **CHARLES H. JUDD**, professor emeritus of education, the University of Chicago, and one of the first members elected to the Laureate Chapter, has accepted an invitation to prepare the society's annual lecture for 1946.

For distinguished service to the profession of speech pathology, **CARL E. SEASHORE**, dean emeritus, Graduate College, the State University of Iowa, has been named as the first recipient of an award by the American Speech Correction Association, the new "Honors of the Association."

Among the ninety-six fellowships recently announced by the John Simon Guggenheim Memorial Foundation is one to **THEODORE C. SCHNEIRLA**, associate professor of psychology, New York University, and associate curator of animal behavior, American Museum of Natural History, for studies of the relationship between instinct and learning in insects. Dr. Schneirla is now in Tehuantepec, Mexico, where he is studying the behavior of colonies of army ants. This is the second Guggenheim award to Dr. Schneirla.

LIEUT. SADIE AARON, USNR, director of guidance, testing, and special classes in the public schools of Houston (Tex.), is on leave of absence for service as psychologist in the psychiatric section, U. S. Naval Hospital, Norfolk.

WAYNE L. ALLEE, instructor in psychology, University of Colorado, has been appointed to an instructorship in psychology, Stephens College (Columbia, Mo.).

CHARLES SCOTT BERRY, chairman of the Bureau of Special and Adult Education, has retired from the staff of the College of Education, the Ohio State University.

WALTER V. BINGHAM, chief psychologist in the Classification and Replacement Branch of the War Department, gave an address on "Psychology and the War" before the Canadian Psychological Association during its annual convention which was held in Montreal on May 28 and 29.

ARTHUR BURTON, formerly with the California State Personnel Board, has been appointed Senior Clinical Psychologist with the California Youth Authority.

NORMAN CAMERON of the University of Wisconsin, and **S. J. BECK**, of the Psychology Laboratory of the Michael Reese Hospital, Chicago, Illinois, have resigned from the editorial board of the *Journal of Clinical Psychology* in protest against the discriminatory editorial statement in the first number of that journal regarding the selection of trainees for clinical psychology.

CHARLES M. DISERENS has been promoted to a professorship at the University of Cincinnati.

HAROLD O. GULLIKSEN, of the University of Chicago, has been appointed professor of psychology at Princeton University and Research Secretary of the College Entrance Examination Board.

JOHN A. IRVING has resigned his position as professor and head of the department of philosophy and psychology, University of British Columbia, to accept an appointment, effective July 1st, as professor of ethics and social philosophy, Victoria College, University of Toronto.

ARTHUR F. JENNESS has resumed the chairmanship of the department of psychology at the University of Nebraska after having been relieved from active duty as an officer in the Army Air Corps.

CLIFFORD E. JURGENSEN, formerly chief psychologist of the Kimberly-Clark Corporation, has been appointed personnel director of the Minneapolis Gas Light Company. He took up this work on May 15.

FORREST A. KINGSBURY, for several years secretary of the department of psychology at the University of Chicago, has been made acting chairman of the department.

OTTO KLINEBERG, professor of social psychology at Columbia University, will go next August to Brazil as exchange professor to teach graduate students and to establish a department of psychology at the Escola Politecnica of Sao Paulo. He will receive a supplementary grant for this work from the U. S. Department of State, as part of its program for facilitating such exchanges.

NORMAN C. MEIER, of the department of psychology, at the State University of Iowa, has been granted a leave of absence (May-September) and will be associated with George Gallup in the American Institute of Public Opinion.

EDWARD D. MYERS, dean of freshmen and professor of psychology, Trinity College (Hartford, Conn.), has been appointed dean, Roanoke College (Salem, Va.).

CHARLES L. ODOM, associate professor of psychology, Southwestern Louisiana Institute (Lafayette), has been appointed to teach psychology during the first term of the summer session at Tulane University.

G. S. RAZRAN and **D. S. SPRAGG** have been promoted to the rank of assistant professors of psychology at Queens College.

S. O. ROBERTS, Dean of Students at the Agricultural Mechanical and Normal College (Pine Bluff), has accepted a position on the faculty of Fisk University (Nashville, Tenn.)

CARL R. ROGERS, professor of psychology at Ohio State University, now absent on leave as Director of Training of the USO, has been appointed professor of psychology at the University of Chicago and consultant in counseling to the dean of students. He will begin his work during the second term of the summer quarter of 1945.

LYNDE C. STECKLE, assistant professor and head of the department of psychology has been promoted to a full professorship at Denison University (Granville, Ohio).

CALVIN P. STONE, of Stanford University, has spent the past several months in research work in the department of psychology of the Psychiatric Institute and Hospital, New York City. He will also give instruction during the summer session in the department of psychology of Columbia University.

CAPTAIN DONALD E. SUPER, formerly associate professor of psychology, Clark University, now in service with the Army Air Corps, has been appointed associate professor of education and research associate in the Horace Mann-Lincoln Institute, Teachers College, Columbia University.

ALBERT S. THOMPSON, instructor in psychology at the University of Pennsylvania, has been appointed associate professor of psychology at Vanderbilt University and will assume his new duties in September.

JACOB TUCKMAN, former psychologist for the Jewish Vocational Service of Cleveland, has been appointed executive director, Jewish Vocational Service, Montreal.

The Kentucky Psychological Association held its annual meeting on April 25, at the University of Louisville. The morning session was devoted to scientific papers and a business meeting and the afternoon session to a symposium on psychological activities in progress throughout Kentucky.

The Louisville (Ky.) Psychology Club, with a membership of forty-eight, which includes social workers, physicians, teachers and counsellors in addition to psychologists, holds monthly meetings at which addresses on psychological topics are presented and discussed. Attendance ranges from twenty to forty-five.

The National Council of Women Psychologists held a luncheon meeting at Teachers College, Columbia University, Saturday, April 7, 1945. Addresses by MARION BILLS, FRANCES TRIGGS and LT. MILDRED B. MITCHELL were followed by a business meeting.

SAUL ROSENZWEIG, Western State Psychiatric Hospital, Pittsburgh 13, Penna., who is preparing an introductory comprehensive book on projective approaches to the study of personality for publication in the near future, would appreciate receiving any information (or reprints) regarding work in progress from workers in this field.

The *Institute of Applied Psychology*, Iqbal Munzil, Kachiguda, Hyderabad-Dn., India, is interested in receiving reprints, sample tests, price lists, and catalogues in the areas of vocational psychology, psychotherapy and child guidance.

The Allis-Chalmers Manufacturing Company has issued a booklet entitled *You and the Returning Veteran*, prepared by ESTHER H. DEWEERDT and OLE N. DEWEERDT, as the outgrowth of lectures to management and supervisors in an effort to promote understanding of the nervously affected veteran. After the manuscript was prepared it was revised in consultation with shop superintendents and foremen before being printed. Copies may be obtained on request by writing to the Allis-Chalmers Manufacturing Co., Milwaukee 1, Wisc.

The Center for Continuation Study of the University of Minnesota has issued a mimeographed report of the *Conference on Counseling for Veterans*, sponsored by the Minneapolis Vocational Guidance Association, held January 18 to 20, 1945, which contains the papers and discussions at the conference and is available for distribution at a price of \$1.00. Persons interested should address the Center for Continuation Study, University of Minnesota, Minneapolis 14.

The name of the Western State Psychiatric Hospital, Pittsburgh, Penna., has been changed by action of the Legislature to Western State Psychiatric Institute and Clinic, to emphasize its important functions in training, teaching and research. In cooperation with the University of Pittsburgh, instruction is given in medicine, nursing, psychology, social service, and dentistry.

An appointment as half-time Research Assistant in Psychology is available at the University of Illinois. This position pays \$800 for eight months, commencing in October, University tuition fees being waived for appointee. The appointment has been made possible by a grant from the Research Board of the University of Illinois to further research upon appetite, food preference and dietary habit in the rat. The work will be under the supervision of Professor PAUL THOMAS YOUNG, Urbana, Illinois.

New Program in Personnel Relations at Ohio State. Ohio State University has announced a new university-wide program of research, service, and instruction in personnel relations, planned to meet current and future problems of business, labor, industry, education, and government in Ohio. A Personnel Research Board made up of representatives of the various colleges, with Vice President HARVEY H. DAVIS as *chairman*, Professor CARROLL L. SHARTLE, as *secretary*, has been established; HAROLD E. BURTT is one of the *members* of this Board. An advisory committee of leaders in business, industry, education, and government is also being established. The research now in progress or planned for the future centers about the following topics: Personnel practices for small business, Worker attitudes, Scope of personnel administration, Organization and executive leadership, Combating absenteeism, Executive and supervisory talents, Job potentialities in Ohio, Job analysis for distributive industries, Practical problems of wages, Sales engineering, Graduate and undergraduate engineers, Re-engineering jobs for the handicapped, Tool engineers, Interviewing and counseling, Supply and demand of personnel workers, Jobs in radio and television, Learning to fly, and the Physical and mental health of teachers.

Surveys on the Effects of Noise Abatement. F. KENNETH BERRIEN and CLARENCE W. YOUNG, of the department of psychology, Colgate University, have been assigned by the University to conduct extensive surveys in manufacturing establishments on the effects of sound quieting on workers and production, under the auspices of the National Noise Abatement Council and the Acoustical Materials Association. The surveys conducted in six eastern states will place special emphasis on determining the effects of noise reduction on health, accidents, speed and quality of output, absenteeism, employe turnover and genral morale. To determine the kinds of factory noise for which accountal treatment gives the greatest benefits and the levels at which such treatment is most effective, studies will be made in a specially equipped laboratory at the university. In addition, through records, interviews, and morale questionnaires, studies will be made in various industrial plants before and after sound reduction is introduced.

Examinations for Research Assistant and Junior Research Assistant. The Board of Examiners of the Board of Education of the City of New York has issued a Preliminary Announcement of Examinations to be held in the early Fall of 1945 for license as Research Assistant and Junior Research Assistant in the Bureau of Reference, Research and Statistics. These are open to both men and women who must be able to plan and conduct educational research and testing projects and to analyze and interpret the data resulting therefrom. For Research Assistant, the applicant must be between 28 and 45 years, with a Bachelor's degree and 60 semester hours of approved graduate courses, of which 40 must be in the field of psychological and educational measurement, statistical methods, educational psychology and educational research, together with eight years of experience in teaching and educational research. The Junior Research Assistant must be between 24 and 40 years, have 30 semester hours in approved courses, of which 24 hours must be in the fields listed above, together with three years of experience in teaching and one year of approved experience in educational research. The salary of Research Assistant is \$5,000 and of the Junior Research Assistant \$3,500. Appointments are made from an eligible rank list. Requests for information, which must be in written form should be addressed to VESTA F. DAVIS, Chairman, Committee on Research Licensing, Board of Examiners, Board of Education, 110 Livingston Street, Brooklyn 2, N. Y., and should include a large self-addressed envelope with adequate postage.

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